

My sedan has more ground clearance than your SUV!

Foreword

Advice in magazines regarding the methodology of softroader selection is generally given by seasoned expeditioners who had cut their teeth on mechanical-based 4-wheel drive systems for decades and has recently progressed to SUVs as the technology changed. This is an uncomfortable situation where one has to “let go” of a familiar concept which has become second nature (because it works) and now embrace a new technology (which only sometimes works – but getting there).

Such opinions are not necessarily biased, but for the novice, perhaps a perspective from the other end of the scale – i.e., what could be *fairly* expected from a softroader in exceeding the capabilities of a sedan (from where the buyer wants to upgrade) – would be useful.

So rather the “half-full glass” viewpoint instead of the “half-empty” one, i.e. what can it do *better* (compared to a road car) than what it can *inevitably* only do worse (than a traditional 4x4).

In other words, advice for those who find it interesting to read (and watch on TV) about the amazing feats of pucker 4x4s, which:

- can reach the North Pole quicker than a pack of dogs pulling a sled
- circumvents the earth along the equator
- rolls over when the tyre pressures are wrong
- loses a front/rear bumper when on expedition through the Namib

but in spite - or perhaps because of - this, still does not want one. If you were to adapt the lyrics chanted by Sting in the opening bars of Dire Straits' “Money for Nothing” (off Brothers in Arms), it would go: “I want my SUV....”

As the definition of an SUV is rather vague, a number of manufacturers depend on this ambiguity to get their “car” certified as such. From my humble experience, 4-wheel drive and traction control does not an SUV make.

E.g., a typical conversation regarding SUV qualities at a dealership, could go something like this: What are the capabilities of this Sport Utility Vehicle? Well sir, just the other day I put my paddle ski on the roof rack and my son's bicycle in the back – these are our respective sports – so as an SUV, pretty good.

From a utilitarian viewpoint, just the week previously, my wife bought two chairs at a car boot sale, and brought it home in this very car. Later that same afternoon, I managed to squeeze 10 (ten!) green bags with garden refuse into the boot (although I had to fold ONE rear seat section down) and took it to the dump. So this proves its abilities as an SUV.

Yes, but how good is it off-road? Well sir, we don't rightly know, as thus far, you are the first person to ask that question. But if you read this nice glossy brochure we have here, you will see that it has everything you need in order to go off-road, after all, it IS an SUV, and you know the brand.

So for the purposes of this article, a softroader is defined as an SUV *without* low range. The Forester is included in this category, as when you do the sums, low-range first gear has a similar ratio (km/h per 1000 rpm) than first gear on a number of current SUVs with six-speed transmissions.

What has happened so far

The basic message by Andrew Roy (LW, October 2009 – Buying your first 4x4) was “Don't read – test drive”, which is of course the sensible thing to do, also in the case of softroaders. However, in Andrew's case, he was looking for a used vehicle. It is doubtful you'll find a dealer willing to loan you a car off the showroom floor over a weekend, just so you can go hacking through the bushes with it. To counter this obstacle, there are a number of checks one can do after reading the *reviews*

advertisements to confirm their legitimacy. Either on the dealer floor, or if you don't mind people looking at you funny or getting arrested on suspicion of sabotage, in any mall parking lot.

The background to this education was the terrible mistake of, after really getting tired of digging my sedan out of the sand one December holiday, unwittingly buying the most capable softroader at the time (2001 Subaru Forester 2.0GX) and expecting that, 7 years (and >200,000km) later, surely all softroaders must by now be better and more capable off-road due to the addition of traction control. After all, the only electronic trickery *that* model Forester had, was ABS (OK then, also two air bags), and not even the LSD as fitted to later models – and it punched way above its weight (still does).

Sadly, this expectation turned out to not be the case, and it is this process of eliminating the “lesser equal softroader” from the equation, that is presented here. Awareness of this information may still only lead to a compromise at best but hopefully now, an *informed* one (i.e. what is it going to cost extra to get this car to do what it should) with fewer surprises after purchase. At the same time avoiding the title of this article being applicable to you.

Still, *deemed* seems to be the most accurate description of the suitability of any softroader you could choose for trail and mild off-road use, as no doubt, there will be something that the car cannot do which even the most meticulous research could not have told you prior to your purchase.

PART 2

Prior to your vehicle choice - and regardless of it - you envisaged to fit a roof rack in order to - in addition to soft luggage, a spade and a high lift jack - carry two jerry cans and a proper spare wheel. You are really chuffed with yourself that you remembered to check that this vehicle (**Hint 1**) has only a space-saver as a spare and that (**Hint 2**) the longitudinal roof rails are standard – take note, on some SUVs they aren't!

You get home with your purchase and start reading the manual, where it states that a load of 50kg on the roof rack mounting points should never be exceeded. Resulting in - together with the mass of the roof rack - *either* 2 jerry cans (and then only just!), *or* a spare wheel and half a jerry can being supportable, but not all. In an instant – an epiphany, you could say - you understand what Andrew St Pierre-White meant when he stated that 4x4 vehicles is the one category of car that people are most dissatisfied with after acquisition.

So, **Hint 3**

READ the user manual of the car prior to buying it.

Bar the inevitable slip-ups like the one above – but you know now - the following seem to be the main features that most buyers will evaluate in order to determine the vehicle's suitability for off-road use:

- tyre type, size and profile
- ground clearance and overhang
- traction control

1. Wheels and Tyres

Considering this topic, the choice is not as obvious as it may seem. Most SUVs come with H/T rubber, which resorts under the category of “scrabblers”, as they are groovy (but not in a 60's way) instead of blocky. As a forum member put it: *If you have not yet changed the factory tyres on your SUV, do so. They are equally useless on all surfaces alike, but really show their uselessness off-road.*

Hint 4

Compare the detail on the sidewall of the OEM tyres with that of the same replacement at your local tyre shop, as the former in some cases are economized versions of the replacement you buy at tyre dealers. If you always suspected new cars are built *down* to a price – well, now you *know* it.

E.g. the identical replacement tyre to the ones fitted to the road wheels that came with my softroader, had not only a higher load rating, it also had an additional polyester ply on both the tread and sidewall. A useful improvement, as sidewall damage is not generally repairable. Except in the Karoo.

In this thorny environment, at any one time, you will see at least six gaiters per tyre on my friend Charl's bakkie, who farms there. I also have it on good authority (his), that if the hole is big, you can put two gaiters in.

Hint 5

Beware of the higher-specced models in a vehicle range. "Bling" is generally added to these cars in an attempt to justify the price. One of these "look faster" accessories which limit any vehicle's off-road ability is the wheel size. For some reason, large rims/low profile tyres are desirable (compulsory?) on SUVs. When in doubt, a sanity check would be to ask yourself what *any* feature or accessory contributes to *your* intended application. Everything has to be "fit for purpose". Even the onboard GPS.

A recent conversation with a car salesman demonstrates the uncanny similarity between fishing and off-roading, in terms of the tallness of the tales:

I requested that the 18" wheels be swapped with that of the cheaper model's 17" wheels on a vehicle I was considering buying, as I wanted a higher tyre profile to allow for deflating when driving on sand.

The salesman then enquired whether I had ever been up Dune 7 (just outside Walvis Bay) with a vehicle of this type. I replied no (I did run up it as a kid holidaying with my parents and did not think it possible for any vehicle to get to the top – but maybe the dune is smaller now).

This vehicle, he tells me, has been specifically designed to drive on sand and go up dunes like that. You almost do not even have to deflate the tyres – well, just a little, to 1.8 bar. Therefore 60 profile tyres will be fine.

I then explained to him that it was not so much (but based on a previous experience with 65 profile tyres on 16" rims in sand, it is really) about being able to deflate the tyres to float on the sand that smaller rims were required, but that I had once lost a tyre near Ai-Ais and had to have one couriered overnight from Windhoek to Keetmanshoop, where it was fitted the next morning. This was the most expensive – still true 3 years later - tyre I had ever bought in that size – a 70 profile on a 15" rim.

The point is that when you travel in a convoy and lose your *second* tyre, no amount of money, regardless of wheel size or tyre profile is going to get a spare tyre to where you are, by sunrise tomorrow. So it would be advantageous to be able to swap tyres – if not complete wheels – between vehicles. As 16" and 17" wheels with 65 profile tyres are presently SUV industry standard, this is the size to have - just for that extra little bit of peace-of-mind.

Hint 6

It is sometimes difficult to distinguish whether the advice you get from someone whose livelihood depends on you believing his story, is firsthand, or falls in the category of hearsay/urban legend. I have found it useful to picture the narrator in the situation that was just described, with him behind the wheel. Common sense should tell you whether there is "something wrong with this picture".

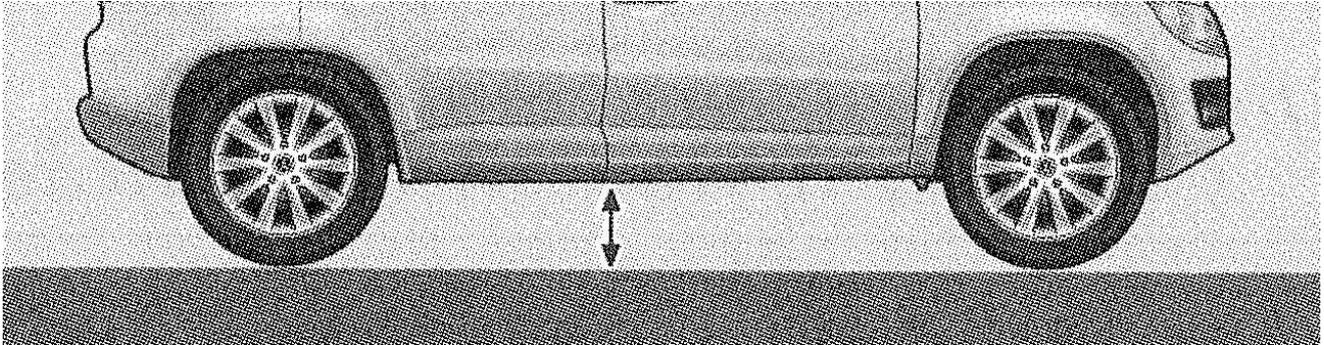
The same goes for the pre-launch hype published by motoring journalists/manufacturers, with marketers tending to get ahead of themselves (although not restricted to the automotive industry). A statement like "the SUV has been evaluated under the harsh conditions of the Namib" immediately conjures up an image in the reader's mind (or is it just me?) that this is *exactly* the car for that dune trip he had always wanted to undertake.

Marketers understand the power of suggestion and the psyche of their intended buyers and deliberately (this is what they are paid for) write advertising copy to exploit this weakness and influence sales.

If it does not show a picture of the car actually on the sand, it was not there. Or if it was, its performance was somewhat under par, and the manufacturer chose not to tell you that.

2. Ground Clearance

So after you read the disappointing roof load-bearing statistics in the manual, you decide to page to the off-road section just to confirm the claimed 195mm of ground clearance (and according to the glossy dealership brochure, even as much as 200mm!), as somehow, the car *does* look a bit low in the front. You come across the following image, with the accompanying text reading: “This is the vertical distance between the level ground and the lowest item on the vehicle between the axles”.



You get on your knees with a tape measure and indeed, the ground clearance is as stated, which unfortunately, is NOT the lowest point on the car.

The front of the car is lower (refer picture below) than the claimed value by 25mm (actually by more, considering the gauge being bent). Good luck to the sump if the bash plate is flimsy.

The relevance of a ground clearance dimension specified at any point other than the lowest, escapes me. Such a specification is misleading at best, expensive at worst and is potentially harmful to not only the vehicle, but also to the car maker's credibility. One wonders why they do it.



Hint 7

If the ground clearance point of measurement is not stated in the brochure – some manufactures *do* tell you – assume that it has been measured at the HIGHEST point. The only practical solution is to go and *measure* on the showroom floor or parking lot prior to buying.

Note that the same dodgy figures – supplied by the manufacturers – are also published in most magazine's Buyer's Guide, so they have to be confirmed for *any* vehicle.

Hint 8

A useful aid is a set of gauges as in the image below. A wooden dowel, cardboard strip or any other stiff material will do. The four on the right are from off-cut stainless steel sheet.

Make a few, from 190mm (already too low for sand driving) upwards in 10mm increments. It's then easy to sweep these "yardsticks" underneath the car and see where they get stuck.



Hint 9

Prior to this test, check the tyre pressures, as these are sometimes inflated to 3 bar in order to enhance the clearance. Not by much, but every apparent bit may just culminate in a sale.

Hint 10

Another point to confirm, is that there is more ground clearance beneath the rear wheels than the front by 10 – 20mm, as after the tank is filled, 80kg of luggage loaded, bikes on the back, kids on the rear seat and spare wheel and half a jerry can on the roof rack, the rear end on some SUVs (Subaru's Forester being the exception, due to the self-levelling rear suspension option) gets a bit tired.

Hint 11

Look underneath the car from behind and note the ground clearance where the transverse links attaches to the wheels. Even if the clearance of the car seems sufficient down the centre-line, this is the part that will be rolling rocks along roads with tall *middelmannetjies* and grading the road in deep sand, getting you stuck. If the car comes with rubber covers attached to the leading surface of these parts as standard, you must realise that it is a compromised design, as the covers have been added to prevent dents and paint chips caused by potential obstacles.

One could improve this situation by fitting taller tyres/springs or suspension spacers afterwards, but why *start* out with a handicap?

The images below illustrate the point. Note that these SUVs are of the same brand, illustrating that, just because a manufacturer has built a very capable off-road SUV once, this does not guarantee that they are necessarily going to (or want to) get it right a second time.

GOOD



NOT SO GOOD



3. Traction Control

Nowadays, all softroaders have some form of traction control, most making use of virtually identical building blocks, e.g. a number of manufacturers sharing the same Bosch or other European/Japanese equivalent ABS-based system. The following features are common:

- Torque apportionment where required via the ABS system
- ESP/DSC
- HDC
- Some form of Off-road Mode, changing the throttle response and forcing an initial 50:50 front/rear torque split on the drive train
- A Tiptronic transmission option, which can start off in either 1st or 2nd auto or manual, and also provide options for the gear shift points.

Due to the above similarities across virtually the complete range of SUVs available, in order to distinguish the various vehicles' capabilities from each other in terms of effective traction control, one should rather look at the *execution* thereof, which may sometimes be lacking.

Where some manufacturers give you all the features (just so you can tick the box) and provide an on/off function for some/most of them, others have mapped same into specific *tested* proportional combinations, changing according to the *driver* assessment of the situation and thereby selecting the *appropriate* mode.

Briefly, most traction control systems operate on the principle below:

Wheel spin is detected via the ABS sensors, and by braking that particular wheel(s), torque is transferred to the tyres with better traction. The braking is proportionally controlled, as in specific situations it is beneficial to allow *some* wheel spin - such as in deep sand or mud.

So far so good – pretty much as you understood it to work. But how does e.g. a multi-mode traction control system differ in approach to a single-mode or “always on” system. Would the latter be good enough?

A multi-mode system provides for the following selectable distinctions:

- Mode 1:** For slippery hard packed surfaces, such as a gravel road, wet grass, etc. It will start the (auto) transmission out in 2nd gear, remove some sensitivity from the accelerator and although allowing it, closely limit wheel spin.
- Mode 2:** For sticky/uneven surfaces, e.g. mud or ruts. The (auto) transmission will start out in first gear, thus providing more torque at pull-off. More wheel spin will be tolerated.
- Mode 3:** For soft surfaces such as dry sand. The transmission will “hang on” (possibly to red-line) to the lower gears longer before shifting up. Sensitivity of the accelerator may be increased and even more wheel spin allowed.

This triggers a fair observation: A softroader which does not allow driver input in terms of terrain, cannot sense (yet) whether the wheels are slipping on gravel, mud or sand. It can therefore not apply optimal traction control, as for each scenario the wheel slip biasing should be different.

A number of vehicle manufacturers have implemented this type of TC system, e.g. LR, Toyota, Mitsubishi and Jeep, with more joining this group.

Where some softroaders are excellent handlers, dynamic performers and frugal fuel consumers, based on a 4-wheel drive version of e.g. an up-scaled hatchback (read *road car*), what you are actually looking for is a smaller version of an accomplished 4x4, losing only say, low range and air suspension (read *off-roader*).

This presents a conundrum: It is clear that only in *some* cases pedigree would be a good indicator of capability. To distinguish between the two, try to bear in mind the *intended* market the car was designed for.

General

Regardless of reading all one can about softroaders in terms of first drives, reviews, detailed road tests, manufacturers’ specifications and owner’s manuals (and one should, however flawed these sources may be), a bullet-proof choice can never be guaranteed.

Hint 12

Be especially wary of UK/European road tests, as their concept of “off-road” is not what we (South Africans) understand under it. Not even close.

(Watching) Dakar and WRC is their cup of tea, combined with occasional snow, some mud in the drive-way or inspecting a ploughed field after heavy rains – roving the ranch, rather than the range, so to speak. “Off-road” really means off the tar, but basically still on roads, just *unsealed* ones.

Hint 13

A welcome exception is the Australian motoring press (off-roading seems to be a Southern Hemispheric or African activity?), especially <http://www.caradvice.com.au>.

In addition to normal road tests, they from time to time have separate off-road reviews and comparisons, where the car is driven until it gets stuck, following which some pictures are taken and an explanation given of what went wrong. The choice of vehicle is not as wide as locally in terms of model range, engine and transmission type, but one gets a fair idea of what to expect.

Hint 14

Assuming one cannot get a loan car from the dealer to bash the bundu with over the weekend (dang!), a good alternative is Youtube. Typing in your car choice followed by “off-road” on Google, will often return a Youtube reference. Seeing where other owners go with their softroaders, you may just be surprised (even amazed).

Of course, if there is *no* Youtube response on your selection of vehicle, that is also an answer.

Hint 15

As the definition of softroader on this forum assumes no low-range, make things easy for yourself and get an automatic transmission.

The transmissions are generally well integrated with the traction control, and the slip allowed by the torque converter at standstill, conservatively gives you a torque advantage of at least 2.

Hint 16

Perhaps this is where the process should have started, by talking to friends/colleagues with the same car you intend buying, whom could perhaps show you pictures of where they have “gone boldly where no one has been for a long time”.

Or as a group of softroaders – with at least one proper 4x4 (WITH a rope!) for recovery, just in case – traipse across a suitable piece of veld close by one Saturday, even if only as a passenger. How much you will learn in this case, will depend to a large extent on the confidence and experience of the driver.

But a capable car inspires confidence, so observing this will also be helpful.

Hint 17

Remain focused on the selection criteria.

In any comparison, one should be mindful not to fall into the trap of comparing modern vehicle features with that of your present (older) skedonk, as they all will impress with the niceties that have been added since previously buying a car, e.g. iPod compatible MP3 CD player with great sound, ceiling mounted holders for your sunglasses, trick functions on the trip computer, storage compartments all over, extra 12V power points etc.

As these things are now standard on most new cars, it will only serve as distractions to any *off-road capability* evaluation.

Comparative results should therefore preferably be restricted to vehicles from a similar time zone (three years, or so).