Latest Suzuki SX4 S-Cross 1.4 Boosterjet Hybrid SZ5 ALLGRIP– Road Test

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Suzuki’s new SX4 S-Cross Hybrid, in top spec SZ5 ALLGRIP guise…

…put through its paces by Kim Henson

(All words and photographs by Kim).

Slightly larger than the Vitara SUV, the S-Cross ‘Crossover’ SUV (the first examples of which were sold in 2013) is intended to be a family-friendly practical multi-purpose vehicle, and, like the latest versions of the Vitara and the Swift Sport hatchback, the 2020 models benefit from a new and innovative 48 volt self-charging hybrid system. Suzuki says that this provides improvements in terms of fuel consumption and emissions, to the order of 20 per cent compared with earlier versions.

Both the S-Cross and the Vitara are built at Suzuki’s plant in Magyar, Hungary.

The S-Cross is offered in three specification levels, all of which are well-equipped and incorporate a wealth of safety systems (further improved compared with the already impressive previous versions), including, for example, LED projector headlamps, seven airbags (including a driver's knee airbag) and collision-mitigating Radar Brake Support as standard. This employs milliwave radar for all-weather, all speed, day or night effective operation, and activates three stages to avoid or mitigate collisions – 'Warning', 'Brake Assist' and 'Automatic Braking'.

The S-Cross employs 'Total Effective Control Technology' in consideration of occupant protection impact absorption and low body weight. Much use of high tensile steel, plus computer-aided engineering design, helps to make the body as safe as possible in a crash, as well as fuel-efficient.

The model line-up starts with the SZ-T (from £20,749), rising through SZ-T level (from £23,749) to SZ5 (from £25,399 and costing £25,749 for the ALLGRIP version, as tested here, although metallic paint, as applicable to our car, adds another £500 to this figure).

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PROPULSION TECHNOLOGY

All S-Cross models are powered by a revised version of Suzuki's well-respected 'Boosterjet' 1.4 litre turbocharged petrol engine, developing a healthy 129 PS and, equally importantly, 235 Nm (173 lb.ft) of torque between 2,000 and 3,000 rpm.

In conjunction with the petrol motor, and forming an integral part of the self-charging hybrid system, is a synchronous electric motor ('Integrated Starter Generator', or ISG'), producing 10 KW @ 3,000 rpm and 53 Nm (39 lb.ft) of torque at 500 rpm.

The petrol engines have been further developed for the new models, changes including the adoption of an electric motor activated Variable Valve Timing (VVT) set-up for the inlet valves (the exhaust valves are controlled by a conventional hydraulic VVT actuator), plus redesigned fuel injectors and a new fuel pump that delivers at higher pressures.

The electric motor operated inlet valve VVT system is intended to alter the valve timing more smoothly than a conventional system, and because it relies on electric actuation rather

than engine oil, it works independently, and regardless, of the engine's oil temperature and speed.

The combined operation of the two VVT systems is set up to improve and engine power, fuel consumption and emissions.

Suzuki says that this 1.4 litre turbocharged motor provides levels and power and torque more usually associated with normally-aspirated 2.0 litre units.

Boosterjet technology is employed, and this was developed by Suzuki, using a small displacement, high torque turbocharger (boost pressure 1.1 Bar), which is attached directly to the cylinder head, minimising heat loss and maximising gas flow to/through the turbo. In addition, the exhaust manifold is built into the head casting (aiding warm-up from cold). These measures are said to virtually eliminate turbo 'lag'. The Boosterjet system closes the wastegate valve when the engine is under heavy load operation, and opens the valve for normal motoring, to reduce pumping losses, thereby optimising power and fuel consumption.

An air by-pass valve is also built into the set-up, to prevent turbo 'stall' if the throttle is closed and then rapidly re-opened.

The higher fuel delivery pressure of 360 Bar into the combustion chambers, together with clever design of the intake ports, piston crowns and fuel injection system, help to improve power, emissions and mpg. The high pressure introduction of petrol during the air inlet stroke creates a rich fuel-air mixture in the vicinity of the crown of the piston, with a weaker mixture around the perimeter.

A straight inlet port and complex design of piston crown together encourage the required 'tumble' effect for the fuel flow.

The incorporation of a variable fuel control system adjusts the petrol delivery pressure according to driving requirements, thus also reducing Particulate Matter (PM) and

Particulate Number (PN) across engine speed ranges – this system also helps improve atomisation of the fuel mixture, and enhances fuel-efficient combustion.

The self-charging 48 volt hybrid system further assists in enhancements in the key areas of performance, emissions and fuel consumption, as well as improving driving flexibility. Whereas, traditionally, turbocharged engines tended to require high rpm to provide optimum performance, Suzuki's 48 volt hybrid system assists the petrol engine by providing additional power and torque at low running speeds. The electric motor assists when starting from rest and when under acceleration – situations when, usually, in conventional engine set-ups, large amounts of petrol are required.

The new hybrid system operates in a similar way to the 12 volt set-up introduced by Suzuki in 2016 (and which is now installed in all manual transmission Ignis and all Swift models), and importantly is light in weight – its components add less than 15 kg (33 lb) to the overall weight of the car.

Suzuki says that by increasing the ISG's voltage from 12 to 48 volts increases output of the electric motor (to 10 kW), thus also increasing the degree of electric motor assistance and regeneration energy.

The system comprises a 48 volt lithium-ion battery, the Integrated Starter Generator (ISG) already referred to, and a 48 volt to 12 volt (DC to DC) converter. The converter directs power from the 48 volt battery to the car's 12 volt lead-acid battery, enabling lower voltage components such as the car's lights, audio and air conditioning, to be operated.

Both the 48 volt battery and the converter are located beneath the front seats, to assist in vehicle weight distribution.

The belt-driven ISG operates as a generator and a starter motor, and assists the petrol engine during acceleration, helping to provide a total of 235 Nm (173 lb.ft), available between 2,000 and 3,000 rpm. Suzuki has deliberately chosen to use a belt-drive for the ISG, rather than employing a gear drive, as it is quieter in operation.

The system recovers electrical energy (stored in the 48 volt lithium-ion battery) during deceleration and braking, and operates an idle stop function (with the engine cut out when the car is at a halt, for example at red traffic lights).

In addition when the clutch pedal is depressed, to change gear/decelerate, at speeds below about 50 mph, 'electric motor idling' is applied. This innovative aspect then acts to control and maintain engine speeds (at road speeds below 10 mph and with the car stationary) and uses power from the electric motor (rather than from burning fuel, as petrol supply to the engine is cut off) to keep the engine running. The engine, which is still rotating, is then instantly ready to re-accelerate when required, with no delay.

The 48 volt system also incorporates two more new features… 'Torque-fill control', to improve engine response, and 'Torque Boost' (which provides additional torque to assist the petrol engine from low rpm) to make acceleration smoother. Together these enhancements harness the torque produced by the electric motor to assist/add to the petrol engine's own torque output.

The petrol engine's turbocharger operates fully from 2,000 rpm, but Torque Boost is available from lower engine speeds, and is claimed to help to optimise the torque curve and provide smoother 'foot hard down' acceleration from standstill.

The proof of the efficacy of the new set-up is revealed in the figures for the latest S-Cross…

Taking the SZ5 ALLGRIP (as tested in this feature) as an example, the previous model with Suzuki's K14C engine recorded WLTP CO2 emissions and fuel consumption figures of 164 g/km and 38.8 mpg respectively.

By contrast, the new car with the K14D engine and 48 volt hydrid system records impressive equivalent figures of 139 g/km and 45.7 mpg.

Suzuki says that typically translates to CO2 savings of 402 kg per year, plus a fuel cost saving of £230 per annum.

WELL-EQUIPPED

All S-Cross models have comprehensive standard equipment lists, and in addition to the multitude of built-in safety systems, notable features include automatically operating lights and wipers, aluminium alloy road wheels, DAB radio with CD, USB and Bluetooth connectivity, Adaptive Cruise Control (which helps maintain a safe distance from the vehicle ahead), dual zone air conditioning, and electric windows at front and rear.

Buyers of the SZ-T variant additionally benefit from (as examples) 17 inch polished aluminium alloy road wheels, privacy glass, keyless entry plus start button, white stitching on the seat trim fabric, ultrasonic parking sensors, a rear parking camera, smartphone link audio and a navigation system, all as part of the car's standard fittings. The 'Smartphone Linkage Display Audio' ('SLDA') system incorporates a seven inch touch panel display, and includes a three dimensional navigation map to aid identification of landmarks. The system additionally enables the driver to use some smartphone applications with MirrorLink, Android Auto and Apple CarPlay connection.

In addition to the SZ-T niceties, the SZ5 version also features, as standard, a double sliding panoramic sun roof, said to have one of the largest opening areas available in its category, at 560 mm (22 inches), also leather upholstery plus heated front seats.

ALLGRIP FOUR WHEEL DRIVE

Our SZ5 test car was equipped with a six speed manual gearbox, and

Suzuki's optional ALLGRIP Select four wheel drive system.

It is interesting to note that 2020 marks the 50th anniversary of Suzuki 4×4 models, and the firm is the only manufacturer to offer four wheel drive across all its model ranges – Ignis, Swift, Jimny, Vitara and S-Cross (with the type of system – all well-proven – varying according to each model range).

The use of high tensile steel plus other weight-saving measures means that the weight of the vehicle is comparatively low – 1,220 kg (2,690 lb), or 1,285 kg (2,833 lb) for ALLGRIP four wheel drive versions.

For the S-Cross a four-mode ALLGRIP system is used, these being selectable by a straightforward rotary control in the central console…


LO HI
1 2 3 4 5 6 R
S-CROSS
LOCK
PUSH AUTO

The modes are:

‘Auto’ – By default the car runs in two wheel drive road for optimum economy, but automatically switches the system to four wheel drive operation if it detects a spinning wheel.

‘Sport’ – In this mode the system makes best use of the all wheel drive system, in response to accelerator inputs, and helping on twisting routes. At low and mid-range engine speeds, the accelerator/torque characteristics are set and apportioned by the system to provide the best engine response and cornering performance.

‘Snow’ – This applies/controls the four wheel drive system by according to steering and accelerator inputs, to give optimum traction and stability when the tyres are encountering low grip surfaces such as mud or snow.

‘Lock’ – With this mode engaged, the limited slip differential built into the ALLGRIP system helps direct power away from any spinning wheel towards those which have grip, and can be applied to extricate the vehicle from snow, mud, sand, etc.

All S-Cross variants, two and four wheel drive, feature ‘Hill Hold Control’, to stopping the vehicle from rolling backwards, for two seconds after the driver has released the brake pedal (to apply the accelerator pedal).

SUSPENSION AND BRAKES

MacPherson strut front suspension is utilised, plus beam type rear suspension (the latter being used for rigidity and good ride comfort).

Ventilated disc brakes are fitted at the front, with solid disc brakes at the rear.

THE REALITIES

I should say at the outset that I found the S-Cross a very easy car with which to become familiar, and I am sure that this applies even for people who are not used to the model, or Suzukis in general.

As with other vehicles in the firm's line-up, the car's design features and controls are intuitive in nature. That's not to say that the S-Cross is simple, nor is it lacking in features, far from it for it represents state-of-the-art sophisticated thinking in so many ways, and is bristling with useful and reassuring safety and convenience systems.

However, it is evident that in developing the car, Suzuki engineers have thought carefully about the drivers and passengers who will actually be driving and using the vehicle, and have made it straightforward to operate. Well done Suzuki.

Four wide-opening doors provide easy access to the spacious interior, and once aboard, I and all my passengers found the seats to be comfortable. All occupants were impressed by the excellent fit and finish aspects of the seats and all the upholstery.

The driver's seat and the front passenger seat provide very positive location as well as commendable comfort over long distances, and are height-adjustable, with the driver's seat having an up/down range of 59 mm (2.32 in)

Rear seat headroom is generous, leg room reasonable, although a little ‘tighter’ for the passenger in the centre of the rear seat, due to the fairly close proximity of the rear end of the centre console.

The distance between front and rear seat occupants is said to be 814 mm (32.05 in).

It is worth noting that in the SZ5 (also in the SZ-T variant) the rear seat backs can be set in one of two positions, the more upright of the two giving a little extra luggage space (10 litres more then the 430 litres quoted).

The rear seat and luggage boards can be positioned as desired to accommodate different types of load. In effect there are twin floors for the boot, at different levels. With the upper, or main, floor panel lifted, access is provided to a useful additional shallow compartment that is wide and long. Beneath this compartment's own floor panel is the 'spare wheel well', although as standard the car does not come with a spare, but an emergency inflation kit… Personally I prefer the reassurance of having a spare wheel that can be fitted if ever needed.

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In terms of luggage capacity it is interesting to draw comparison with the slightly smaller Vitara, for which the available space varies between 375 and 710 litres (13.24 and 25.07 cu.ft respectively), whereas the S-Cross figures are between 430 and 875 litres (15.19 and 30.90 cu.ft).

A useful bonus is the inclusion of a 12 volt electrical socket in the luggage compartment, as well as one in the font of the vehicle.

Another handy feature of the luggage compartment is the inclusion of two storage compartments, one on either side of the car and handy for securely carrying small items so that they don't slide around while driving.

The main compartment is long, wide and fairly tall, and at the push of a button each of the rear seat back sections easily and rapidly folds forward (not quite horizontally) on a two-thirds:one-third basis. The seat base does not tip.

Storage spaces within the vehicle include a lidded glovebox, ‘bottle’ holders/cubby holes in each of the four passenger doors, a large, lidded compartment at the rear of the centre console, two small open ‘boxes’ alongside the handbrake lever, and an elasticated pocket built into the rear of the front passenger seat. In addition, the rear seat’s centre arm rest incorporates twin cup holders.

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ENGINEERING EXCELLENCE

A look under the bonnet reveals an engine compartment with plenty of room provided around the main power unit, and easy access to its ancillary components. This is good news for ease of servicing and the time required for this routine work, ultimately helping owners as well as Suzuki dealer technicians.

It is also worth noting that the car’s handbook is comprehensive in coverage and very helpful for owners, including maintenance check aspects and servicing intervals, etc.

The overall impression around the vehicle is of careful attention to detail, in engineering as well as aesthetic terms; very encouraging for would-be buyers I feel.

The petrol engine starts and runs quietly, and delivers its power and torque effortlessly, in conjunction with the electric motor (ISG) that cuts in and out seamlessly. When the engine is restarted by the idle stop system, having been halted in traffic (for example), the restart is so smooth that it is virtually imperceptible and inaudible.

It was also impossible for this driver to detect the rotation of the engine by the electric motor at low road speeds.

The car is driven in the same way as any traditional car propelled by an internal combustion engine, and of course there is no need for external battery charging. Displays on the main dash and available from within the on-board computer indicate to the driver when the

system is using electrical power from the 48 volt hybrid system, and, conversely, when the 48 volt battery is being replenished by regenerative operations switched into play by deceleration or braking.

It's a lively performer, accelerating swiftly when required and climbing the steepest of gradients with ease. The petrol engine produces a pleasant but hushed burble if pushed hard. The car will accelerate effortlessly from engine speeds above about 1,500 rpm in each gear.

A super-smooth, slick gearchange quality enhanced the driving experience for me too.

Open road cruising is quiet and smooth. At 60 mph in 6th (top) gear, the engine speed is 2,000 rpm (approx.), whereas at 70 mph the tachometer needle is indicating 2,300 rpm or so.

The car rides comfortably, taking in its stride all the road surface undulations I encountered during my time with the car, and corners with reassuring sure-footedness. The perfectly-weighted power steering, excellent brakes and good turning circle also scored high marks on my checklist.

During my week of test driving the Suzuki there were some days when strong cross-winds predominated, yet I found that the car was not shaken nor stirred in such circumstances.

The headlights were reassuringly effective on both dipped and main beams, and the straightforward, easily-assimilated instrumentation was crystal-clear in daylight and when illuminated at night.

While on the subject of lighting the interior lights were helpfully bright too.

The screen wipers and washers, also the rear view camera, worked well. The self-levelling headlamp beam system was a welcome feature too.

Operation of the built-in 3D satellite navigation system, audio controls and telephone/connectivity functions is via the car's central touch screen.

Thankfully the dual mode climate control system, with individual controls for driver and front seat passenger, can be operated intuitively and easily, without the need for working through a menu system (by contrast with many cars from other manufacturers).

Personally I always prefer a manually operated handbrake/parking brake, rather than an electrically-activated set-up, and was pleased to find this feature on the S-Cross. It is easy to use and effective.

I found that switching the drive mode to 'Sport' sharpened up the car's dynamic responses, but for normal use the default 'Auto' setting was just fine.

I didn't have the chance to try the four wheel drive system, but having driven previous Suzukis (various models across the range, in the last three years) off-road, I am sure that the car would be a competent performer in this respect too (although, of course, it is not intended to be an out-and-out four wheel drive 'off-roader' vehicle such as the Jimny).

What about fuel economy? The official WLTP 'Combined' mpg figure is 45.7, and during my 465 miles with the car it recorded a real-life figure of 45.1 mpg. This included a fair bit of stop-start urban motoring as well as some long-distance driving, and is pretty close to the claimed figure, as well as being impressive for a spacious vehicle offering excellent performance.

When I filled the fuel tank, after some urban motoring, the range showing on the dash computer readout was 385 miles. However with a tank capacity of 47 litres or 10.34 gallons, the theoretical range is around 485 miles at the overall 47.1 mpg achieved during my test driving.

VERDICT

Terrific. The S-Cross looks and feels solidly-engineered and well thought out. It’s an eager performer, is dynamically competent, roomy and comfortable and, knowing Suzuki’s reputation for building dependable vehicles, should be a good bet for long-term reliability and ownership enjoyment.

WHEELS-ALIVE TECH. SPEC IN BRIEF:

Suzuki S-Cross 1.4 Boosterjet SZ5 ALLGRIP

Engine: K14D ‘Boosterjet’ four cylinder, 16 valve 1.4 litre (1373cc), turbocharged direct fuel injection petrol, Euro 6d compliant.

Transmission: Six speed manual gearbox; four wheel drive

Power: 129 PS @ 5,500 rpm.

Torque: Total 235 Nm (173 lb.ft) @ 2,000 to 3,000 rpm.

(Synchronous ‘Integrated Starter Generator’ electric motor: Contributes 10 kW @ 3,000 rpm and 53 Nm (39 lb.ft) torque @ 500 rpm).

Performance:

0-62 mph: 10.2 seconds (2WD, 9.5 sec).

Top speed: 118 mph.

Fuel consumption (‘Official’ figures):

WLTP figure: Combined, 45.7 mpg (2WD, 50.1 mpg).

On test, over 465 miles, average 45.1 mpg.

Fuel tank capacity: 47 litres (10.34 Imperial gallons).

Approximate range on full tank at our actual achieved mpg: 485+ miles.

CO2 Emissions, WLTP: 139 g/km (2WD, 127 g/km).

Taxation: First year £205 (2WD £165), later years £140. Benefit-in-Kind 32% (2WD, 30%).

Warranty: Three years/60,000 miles.

Insurance Group: 25D

Dimensions: Length 4,300 mm (14.11 ft), Width 1,785 mm (5.86 ft), Height 1,585 mm (5.20 ft), Wheelbase 2,600 mm (8.53 ft), Kerb weight 1,135 kg (2,502 lb), Luggage

capacity 430 to 875 litres (15.19 to 30.90 cu.ft).

Price (‘On the Road’): £28,049 (Including ‘Energetic Red’ metallic paintwork option, costing £500).

Sign of the Times…

In these strange times the motor manufacturers are doing their best to make test cars safely available to motoring writers for assessement, for which we are all truly grateful, and the cars are made as safe as possible for the delivery/collection drivers as well as writers, of course. Suzuki has led the way with a full sanitising process which is applied to their road test vehicles on handover. Thank you Suzuki.