GSX-S 1000 GX

Press information

November 2023

Contents

1. Introduction

The GSX-S1000GX joins Suzuki's GSX range for 2024 and brings with it new features and technology, as it adopts the position of Suzuki's crossover model as part of the GSX family.

Like its stablemates - the GSX-S1000 and GSX-S1000GT - it delivers superbike-derived performance from its 999cc inline four-cylinder engine, and like the GSX-S1000GT it provides high levels of comfort, connectivity through its colour TFT dashboard, and a premium sports touring experience.

However, despite shared similarities, there are also significant differences that separate the GX and GT. Longer travel suspension gives extended front and rear wheel travel, increased ground clearance, and a more comfortable upright riding position. Furthermore, it achieves a whole new level of suspension performance by introducing Suzuki Advanced Electronic Suspension (SAES) - Suzuki's first electronic suspension - and by adopting Suzuki's new Suzuki Road Adaptive Stabilisation (SRAS) system. These technologies combine to make the GX comfortable and controllable on road surfaces ranging from urban asphalt and cobbled streets to country roads and motorways.

The result is an exciting new crossover machine that sits comfortably between Suzuki's sport tourer offering and adventure bikes. While delivering superbike levels of performance and sporty looks that distinguishes it as a member of the GSX-S series, the GX also provides long-distance touring comfort thanks to its upright riding position and equipment features.

2. Product concept

The supreme sport crossover

The product concept of; *the supreme sport crossover* speaks to the GX's role in the Suzuki lineup as a new model that represents the brand's vision of what a luxury crossover motorcycle should offer.

This new model offers riders the versatility of a machine built to offer comfort and ease of control, while also being equally suited to responding to a rider's mood when wanting to enjoy an enthusiastic, sporty run or tour long distances.

2. Product concept

Key product features

Styling features:

- The styling embodies the concept of Suzuki's first luxury crossover model.
- A thoroughly modern design speaks of aggressive superbike-derived performance, blended with long-distance touring elegance and the tall, upright riding position and long-legged proportions of a crossover model.
- New front cowl features a sharp nose that culminates with a compact LED headlight, with compact LED position lights running along the sides forming a sharp pair of 'eyes'.
- The contrasting colouring and upswept lines of the cowl's side panels create an aggressive, yet sophisticated, look that complements the tall seating position.
- Exposed side rails and gold front forks and rear suspension motor unit contrast with the blacked-out silencer and engine to emphasise the long-legged nature of the crossover design.
- The lineup of three available colours were carefully selected to convey the model's appeal.

Engine features:

- High performance 999cc, four-stroke, liquid-cooled DOHC inline four-cylinder engine delivers smooth, consistently powerful output throughout its wide power band.
- The engine's broad, smooth torque curve and power delivery reduces fatigue when touring at motorway speeds, while also delivering powerful acceleration when desired.
- The four-into-two-into-one exhaust system is tuned to deliver powerful resonance while delivering a pleasing exhaust sound, while also satisfying Euro 5 emissions standards.
- Electronic throttle bodies help achieve optimal balance between idling speed control and power output characteristics, while also contributing to Euro 5 compliance.
- The air box reduces intake resistance and provides an exciting intake sound.
- The exhaust and intake cam profiles provide a fine balance of performance and controllability.
- Suzuki Clutch Assist System (SCAS) contributes to smooth shifting and results in a light touch to the clutch lever operation that helps reduce fatigue on long rides, especially when caught in busy traffic.

2. Product concept

Chassis features:

- Compact, lightweight chassis is engineered to support the engine's performance and provide maximum control and comfort.
- The twin-spar aluminium frame is built to deliver agile handling and great road holding ability that will go the distance.
- Exposed seat rails feature secure side case attachment points, and a design allows for thicker, more comfortable seats for the rider and passenger.
- The aluminium swingarm provides great road holding ability, contributes to stability in high-speed corners and features the strength to withstand heavy loads.
- Handlebars featuring a wide grip, positioned close to the rider contribute to a comfortable upright riding position.
- Attractive, six-spoke cast aluminium wheels contribute to the handling characteristics, stability, and all-round performance.
- Dunlop SPORTMAX Roadsport 2 radial tyres (120/70ZR17 front, 190/50ZR17 rear) are designed to perform optimally, provide sure grip in all conditions, and deliver the right combination of agility and stability.
- Four-piston Brembo monobloc front brake calipers mated to 310mm floating-mount twin discs deliver strong, reliable braking performance.
- The standard-equipment rear carrier is handy and practical for carrying extra gear, while its integrated grab bars provide the passenger with a firm grip that makes riding more comfortable.
- Suzuki Advanced Electronic Suspension (SAES) is paired with SHOWA SFF-CA™ inverted telescopic front forks and a BFRC-lite® link-type rear shock to deliver a plush, comfortable, and controllable ride.
- Suzuki Floating Ride Control (SFRC) improves manoeuvrability and comfort by helping to keep the seat and handlebars stable while the wheels and tyres absorb the bumps on the road.
- Measures to reduce vibration such as the floating handlebars and rubber-covered footrests contribute to a more relaxing and less tiring touring experience.
- Both the rider and pillion seats feature a new cushion construction that helps maximise comfort on long rides.
- The three-step height adjustable touring windscreen protects the rider to offer greater comfort and less fatigue on long rides.
- Standard-equipment hand guards protect the rider's hands from the elements and give a look of tough, go-anywhere crossover touring performance.

2. Product concept

Suzuki Intelligent Ride System (SIRS) features:

- Suzuki Drive Mode Selector Alpha (SDMS-α) offers integrated riding modes that provide the right balance of control and comfort under a wide variety of riding situations.
- Smart TLR Control integrates the Suzuki Traction Control System (STCS) with Lift Limiter and Roll Torque Control, enabling the rider to better control the bike under diverse and varying conditions.
- Active Damping Control offers three electronically controlled damping settings – hard, medium, soft - plus a customisable user setting, to best match the SDMS-α riding modes or the rider's chosen preference.
- Suzuki Road Adaptive Stabilisation (SRAS) activates automatically when riding on uneven surfaces to provide a smooth ride with a softer throttle response.
- Electronic rear suspension preload settings offer a choice of four modes to match the load requirements of the journey.
- A ride-by-wire electronic throttle system gives greater controllability over the engine and helps harness its power effectively, while working with the other electronic systems.
- A bi-directional quickshifter provides quicker, smoother, more assured upshifts without closing the throttle, and downshifts without operating the clutch lever.
- An updated version of Suzuki's cruise control system continues to operate when using the bi-directional quickshifter, reducing fatigue and making the GX easier to operate on long rides.
- By intervening to control brake pressure while braking through corners, the a lean angle-sensitive Motion Track Brake System helps the rider better trace their intended line through the corner.
- Slope Dependent Control provides more stable braking by monitoring the bike's posture and optimising the ABS to prevent rear wheel lift when braking downhill.
- Suzuki Easy Start System starts the engine with just one quick press of the starter button, even without pulling in the clutch lever when the transmission is in neutral.
- Low RPM Assist helps ensure smoother starts when pulling away from a standing start or riding at low speeds.

Electric equipment features:

- The 6.5-inch, full-colour TFT multi-function display features a scratch-resistant surface, an anti-reflective coating, and support for displaying smartphone app content.
- Smartphone connectivity in conjunction with the free SUZUKI mySPIN app provides easy access to contacts, maps, music, phone, and calendar functions.
- USB outlet for charging the rider's smartphone is built into the left side of the TFT LCD instrument screen.
- A vertically stacked pair of distinctive hexagonal LED headlights creates a sharp look with unique character that makes the front end look light and ready for action.
- The LED rear combination light uses a design that emphasises the stylish lines of the tail.

3. Styling design

The GSX-S1000GX design concept is: unbridled excellence.

The aim was to create a new crossover expression, featuring styling that visually conveys both the potential of its superbike-derived performance and of a capable long-distance tourer that is ready to go. This blends harmoniously with attention to detail that reflects the level of elegance and sophistication that delivers comfort on long rides and makes touring a pleasure wherever the rider wishes to go.

3. Styling design

The bold face of a new crossover machine

The front cowl features a sharp face that culminates in the compact LED headlight. The headlight is flanked by LED position lights that give the look of a sharp pair of ‘eyes’ and express a sporty image.

In pursuit of the optimum aerodynamic form, and to keep the size relatively compact, the shape of the cowl was developed through rounds of analysis and wind tunnel testing until both the designers and engineers were satisfied. This results in improving comfort without sacrificing style. The efforts of the development team also produced a multi-layered expression by which the shape and different colouring of the side panels give the cowl an aggressive look that, at the same time, complements the tall seating position.

Further accentuating the image of a tall machine that is ready to go are the upswept lines on the side cowling panels combined with the matt silver exposed side rails and gold anodised front forks and rear suspension motor unit. These stand in contrast to the blacked-out muffler, engine and other parts that ride low on the GSX- S1000GX.

3. Styling design

Body colours matched to the luxurious and aggressive crossover image

Metallic Triton Blue (YSF) represents Suzuki's brand identity and competitive road racing history. This colour provides a sporty look that symbolises performance, speed, and agility. Glass Sparkle Black (YVB) is a combination of glossy and flat black that expresses fine finish and luxury. Pearl Matt Shadow Green (QU5) is a newly developed colour for the GSX-S1000GX. It blends equally well in urban environments or the great outdoors and speaks of functional beauty.

Metallic Triton Blue

Glass Sparkle Black

Pearl Matt Shadow Green

Subtle, yet striking, graphics

The logos on the side cowling panels adopt a design that is immediately recognisable as belonging to the GSX-S series, presenting the model's name in large, bold fashion that adds a tasteful accent to the luxurious styling of this new crossover machine.

4. Engine design

Introduction

The high performance 999cc four-stroke, liquid-cooled DOHC inline four-cylinder engine that powers the GSX-S1000GX is engineered to perform under all kinds of riding conditions, whether touring for long distances or out for a sporty run. A descendant of Suzuki's superbike engines, famed for their winning performance and reliability, the engine for the GSX-S series has undergone rounds of improvements and fine tuning over the years, evolving into a high performance powerplant that is capable of supporting the luxurious and exciting crossover touring experience offered by the GX.

Exciting and usable performance

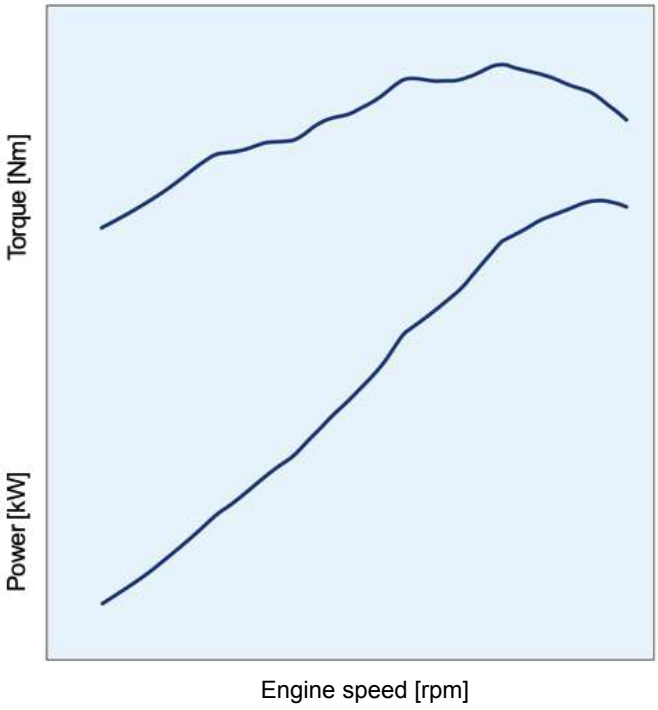
The engine delivers high performance with smooth, consistent, powerful output throughout its wide power band. This makes for an easy and exciting riding experience, both at the low and mid-range engine speeds commonly used when touring and in daily riding, through to the top end. It features a broad, smooth torque curve and power delivery. This combines with a variety of electronic control technologies to offer fine and customisable control over power output characteristics and enable the rider to match torque output when opening the throttle to the type of ride or their riding style at any given time. This includes offering the excitement of powerful acceleration and all-round performance to support aggressive, sporty riding when desired.

999cc four-stroke liquid-cooled DOHC inline four-cylinder engine

4. Engine design

4. Engine design

Displacement	999cc
Engine type	4-stroke, 4-cylinder, liquid-cooled, DOHC
Bore x Stroke	73.4mm x 59.0mm
Compression ratio	12.2:1
Maximum power	112kW (152PS)/11,000rpm
Maximum torque	106Nm/9,250rpm
Fuel consumption (WMTC)*	45.47mpg in WMTC
CO_2 emissions (WMTC)*	144 g/km
Emissions level	Euro 5



4. Engine design

Exhaust system

The four-into-two-into-one exhaust system for the GSX-S1000GX features clean, sharp looks and an exciting exhaust note that is not intrusive enough to hinder the GX's long distance touring ability. Its chamber structure and two-stage catalytic converter design contributes to maximising overall performance while also satisfying Euro 5 emission standards. The short muffler is blacked out to help accentuate the bike's tall look and adds elegance to the overall design.

Electronic throttle bodies

Electronic throttle bodies help achieve the right balance between idling speed control and power output characteristics, while their design also contributes to complying with Euro 5 emissions standards. Light and compact, these throttle bodies can be customised to best match the type of ride and preferred riding style for any given outing.

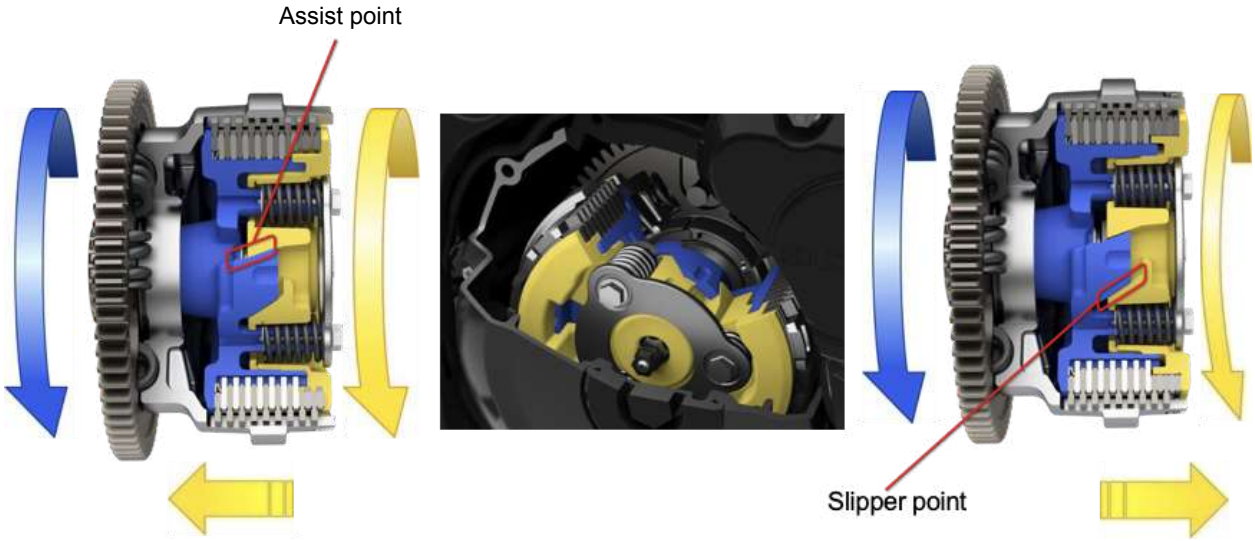
4. Engine design

Suzuki Clutch Assist System (SCAS)

The assist function leverages precision-engineered ramps to force the clutch boss and pressure plate together and efficiently transfer torque to the rear wheel under acceleration, all while using softer clutch springs. This results in a light clutch lever operation.

The slipper clutch partially disengages when downshifting to decelerate to mitigate the effect of engine braking. By helping to prevent the rear wheel from hopping and providing smoother deceleration, this function enables the rider to shift down with greater confidence and maintain better control.

SCAS works harmoniously with the bi-directional quickshifter to deliver an additional benefit to the system's clutch-free shifting.



Other features

- Suzuki Composite Electrochemical Material (SCEM)-plated cylinders reduce friction, promote better heat transfer and increase durability.
- Application of finite-element-analysis techniques make the pistons light without compromising their rigidity.
- The compact combustion chamber design allows for an optimal compression ratio, a flat-top piston shape, and a broad spread of power throughout the rev range.
- Iridium spark plugs heighten the spark strength and combustion efficiency, thereby contributing to higher power, more linear throttle response, easier engine start-up, and a more stable idle.
- 10-hole, long-nosed fuel injectors improve fuel atomisation for better combustion efficiency and lower fuel consumption.

5. Chassis design

Introduction

Every aspect of chassis development focused on achieving the right balance of agility, controllability, and comfort needed to provide a superior crossover riding experience. The end goal was to deliver satisfying sportsbike performance that reflects the heritage of Suzuki's GSX-R1000, while also providing the real-world comfort, convenience, and handling ease demanded of a crossover tourer.

Engineered for a superior crossover riding experience

Core strength is provided by a frame and swing arm that supports the engine's superbike levels of performance. Extended wheel travel in both the front and rear helps smooth out rougher or undulating surfaces, while Dunlop SPORTMAX Roadsport 2 tyres provide sure grip in all conditions.

The GX introduces Suzuki Advanced Electronic Suspension (SAES) for the first time, with a variety of settings that automatically adjust on the fly to match the riding conditions of the moment. Other details include an upright riding position and handlebars that contribute to controllability and stability. The chassis and engine combination, allied to the advanced control systems of the Suzuki Intelligent Ride System (SIRS) provide an exciting new riding experience.

5. Chassis design

5. Chassis design

Twin-spar aluminium frame with strong seat rails

The twin-spar aluminium frame is built to deliver agile handling and great road holding ability, even when carrying a passenger and fully laden. When viewed from the side, the main tubes run straight from the steering head to the swingarm pivot. This design helps achieve high rigidity and lighter weight.

The seat rails serve two benefits. Firstly, they provide rigid and secure attachment points for the optional side cases. Secondly, their relatively low height makes it possible to maximise the thickness of the pillion seat for greater passenger comfort. As a bonus, the exposed design adds to the striking look of functional beauty.

Aluminium swingarm

The robust aluminium swingarm boasts race bike lineage. Rugged and braced, it provides great road holding ability and the strength to withstand long rides, heavy loads, and the demands of sporty runs.

5. Chassis design

Comfortable upright riding position

Research to find the optimum crossover touring riding position led to angling the handlebar grips 55mm closer to the rider than on the GSX-S1000GT. This allows the rider a more upright posture, which enhances comfort. The new handlebars are 50mm longer than the GT, too, and feature a 14mm wider grip placement, making them comfortable to hold and giving the rider greater control over steering with less effort required.

The extended suspension travel and new seat design also lengthen the distance between the rider's hip point and foot point by 15mm, which further contributes to comfort by reducing the amount of bending at the knees. The overall result is a comfortable upright riding position that is less tiring and provides greater control, whether touring long distances or heading out to enjoy a sporty run.

Wheels and tyres

The lightweight, six-spoke, cast aluminium wheels feature a highly appealing design that also contributes to positive handling and sporty performance. They are shod with the latest generation of Dunlop SPORTMAX Roadsport 2 radial tyres (120/70ZR17 front, 190/50ZR17 rear). Designed to perform optimally and provide sure grip, these tyres have been fine-tuned specifically to match the weight and performance characteristics of the GX, and to deliver the right combination of agility and stability. Dunlop's proven tread pattern uses a silica compound that enhances positive grip in wet conditions and features durable wear resistance.

5. Chassis design

Fuel tank

A 19L fuel tank makes it appear compact, though its capacity combines with the engine's excellent fuel efficiency to provide an extended riding range.

Disc brakes

The GSX-S1000GX uses radially-mounted Brembo monobloc front calipers. Each caliper has four opposed 32mm pistons acting on a 310mm floating-mount disc for strong stopping power. A single hydraulic disc provides stopping power to the rear wheel.

5. Chassis design

Rear carrier with integrated grab bars

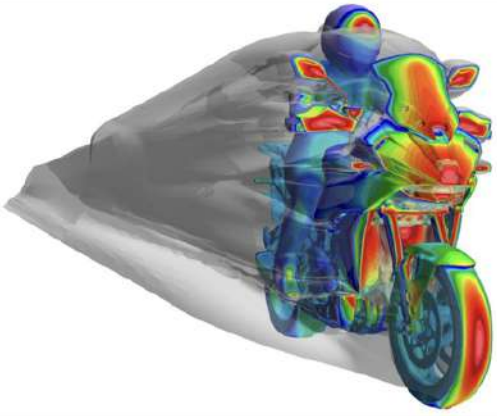
The GSX-S1000GX is fitted with a practical rear carrier made of lightweight aluminium. Solid grab bars on each side provide the passenger with a firm grip but are also designed not to interfere when removing the optional side cases. Because the carrier is a key visual accent at the rear, the design underwent a number of revisions in development to achieve the desired impact and presence.

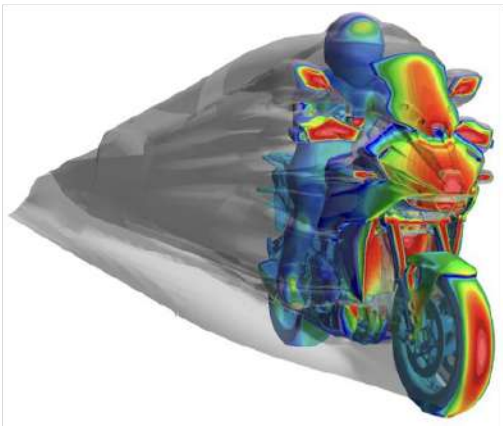
5. Chassis design

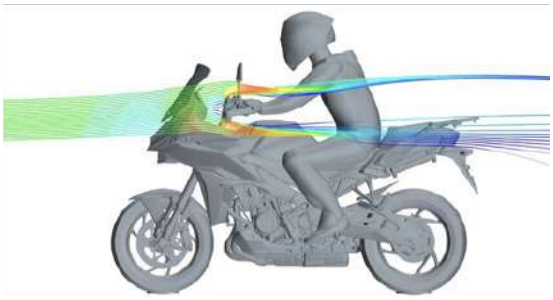
Aerodynamics and wind protection

Aerodynamics and wind protection are critically important to achieving the dynamic performance and level of comfort desired when touring for long distances on a large-displacement crossover machine.

The front cowl, windscreen, and hand guards were all designed through a process that involved both wind tunnel testing and feedback from test riders. This was performed while still paying keen attention to achieving attractive styling. The goal was to maximise wind protection and make the rider more comfortable, reducing fatigue when touring for long distances at speed.







5. Chassis design

Front cowl designed to protect the rider

Attention to detail on the front cowl includes a layered design that suppresses the generation of negative air pressure to help prevent head buffeting. In addition, holes placed strategically on the face of the cowl are effective in reducing front lift. The width of the cowl was also widened to help better guide the flow of air away from the area of the abdomen.

Windscreen

Development focused on maximising wind protection to provide the rider with relaxing comfort. Another design concern was to keep the form as compact as possible and to create an attractive screen that would enhance the appearance of the face. Development involved rounds of wind tunnel testing and analysis as the design was refined until it achieved just the right overall balance of rider comfort and aerodynamic performance, and style. The windscreen's three-step adjustment allows 50mm of travel, raising or lowering the height by up to 43mm.

Hand guards

Beyond their practical purpose of helping protect the rider's hands from the elements, standard-equipment hand guards accentuate the visual appeal of the GSX- S1000GX as a serious crossover model.

5. Chassis design

Minimising vibration to maximise comfort

The GSX-S1000GX is designed to provide maximum comfort for a more relaxing and less tiring touring experience, for both rider and pillion. Attention to detail ranges from measures such as the floating handlebars and rubber footrests that aim to reduce vibration, and a comfortable new seat design.

Floating handlebars

Rubber mounts introduced in the top bridge and handlebar brackets reduce the amount of vibration transmitted to the rider's hands, thereby contributing to reducing fatigue and improving comfort. It is of particular benefit on long rides or when touring. The handlebars themselves are newly-designed for the GX, employing a thicker t5.2 material thickness for greater rigidity and featuring a 14mm wider grip and overall length increase to 877mm.

5. Chassis design

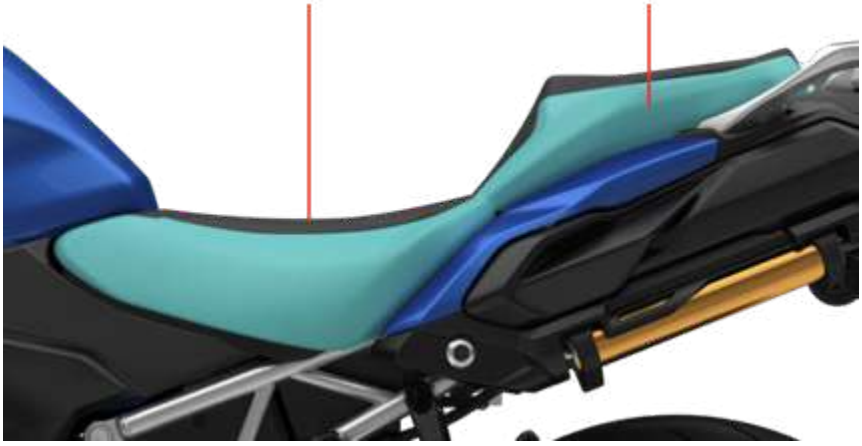
Floating mount mirrors

The mirrors complement the tough-looking styling of the GX, while the floating mount design uses rubber bushes to minimise vibration and provide a clear rearward vision.

Comfortable seating

Both the rider and pillion seats are designed to provide maximum comfort. They also feature a sporty and attractive design.

The rider seat cushion is 15mm thicker than on the GSX-S1000GT. In addition, its top surface is flatter from side to side than on the GT. This enhances comfort by increasing the area that supports the rider's weight from the middle to the rear of the seat, while the seat front is tapered to provide freedom of movement when enjoying a more aggressive, sporty run. The pillion seat is also 10mm thicker than on the GT, and its firmness revised for the GX, and its top surface made 26mm wider.



5. Chassis design

Footrest rubber

The aluminium pegs of both the rider and passenger footrests are covered with vibration-absorbing rubber. This reduces the amount of vibration transmitted to the feet. Additionally, the footrests are positioned lower, so they require less bending of the knees and ankles and thereby help provide greater comfort.

5. Chassis design

Suzuki Advanced Electronic Suspension (SAES)

The GSX-S1000GX is the first Suzuki motorcycle to adopt Suzuki Advanced Electronic Suspension (SAES). The GX was designed with an extended 150mm front suspension stroke and 150mm of rear wheel travel to create an upright riding position that broadens the rider's field of vision and thereby provides greater comfort. The longer suspension also makes it more capable of absorbing bumps when riding over uneven surfaces.

Item	Front	Rear
Overall structure	SAES (with Active Damping Control)	
	SFF-CA™ (Cartridge type)	BFRC-lite® + Ride height
Features	Allows for a wide range of settings.	The balance-free structure provides excellent damping response and superior grip felt in all situations.
Performance requirements	It helps deliver sporty riding performance and comfort on a variety of surfaces	
Electric valve position	Fork cap	At the top of the damper
Stroke sensor	Inside the suspension. This allows for precise feedback that results in excellent responsiveness.	Inside the rod cover, same as for front suspension Hydraulic jack. Stroke sensor for preload amount

Suzuki Advanced Electronic Suspension (SAES) uses Showa EERA® series suspension tuned for the GSX-S1000GX. Showa EERA® is an electronic version of the SFF-CA™ inverted telescopic front forks and BFRC-lite® link-type monoshock. It not only uses vehicle and speed information from the IMU and wheel speed sensors, but also from high-precision stroke sensors compactly integrated into both the front and rear suspension to instantly determine optimal damping in accordance with the suspension stroke speed and riding conditions.

Building on this system, additional programs such as Suzuki Floating Ride Control (SFRC) and Suzuki Velocity Dependent Control (SVDC) are tuned for all the GX's suspension modes. This provides an extremely comfortable and controllable riding experience, offering a wide range of electronic control settings suitable to a superior crossover machine.

In addition, SAES operates more intelligently than conventional systems because its settings are managed by SDMS-α's integrated riding modes, allowing any rider to fully leverage the performance potential of the GX.

5. Chassis design

Benefits of electronic suspension

On conventional suspension systems, the amount of damping is adjusted manually, and the amount of damping depends entirely on the amount of oil moved by the speed of the piston stroke.

In contrast, SAES adds an electronically controlled hydraulic valve to the damping force generating unit, thereby electronically controlling the damping adjustment mechanism without compromising the performance of conventional mechanical suspension systems. This allows a wider range of variable damping force settings to better cover everything from sport riding to comfortable touring, and to respond to varying load and road surface conditions.

5. Chassis design

Suzuki Advanced Electronic Suspension: front

The right fork has a stroke sensor inside that measures the current piston position to the nearest 1/1000 of a millimetre and adjusts the damping 1000 times per second according to the current stroke volume and stroke speed.

The left fork contains the damping cartridge. The solenoid valve's thrust (pushing force) adjusts the damping for rebound and compression, which continually adjusts damping while changing the settings on the go.

A solenoid valve (an electromechanically operated valve) adjusts both the rebound and compression damping. The stronger it pushes on the suspension's flow path, the stronger the damping and harder the suspension setting.

5. Chassis design

Suzuki Advanced Electronic Suspension: rear

Preload adjustment for the rear suspension is electronically controlled. The suspension is equipped with a structure that automatically changes the rear preload setting, allowing the setting for the rear suspension to be changed independently. Oil is sent out by a DC motor on command to change the preload setting of the rear suspension.

There is oil inside that rotates the DC motor and causes the divider plate to move back and forth, changing the force (hydraulic pressure) with which the oil pushes. As a result, the main spring pushed by the oil moves up and down. A stroke sensor monitors the spring's current position and automatically changes the preload setting accordingly.

A solenoid valve housed inside changes the volume of oil, which in turn changes both rebound and compression damping.

The large main spring can be raised and lowered hydraulically.

A stroke sensor housed beneath the black cover measures the current stroke position to the nearest 1/1000 of a millimetre and adjusts the damping 1000 times per second according to the current stroke volume and speed.

5. Chassis design

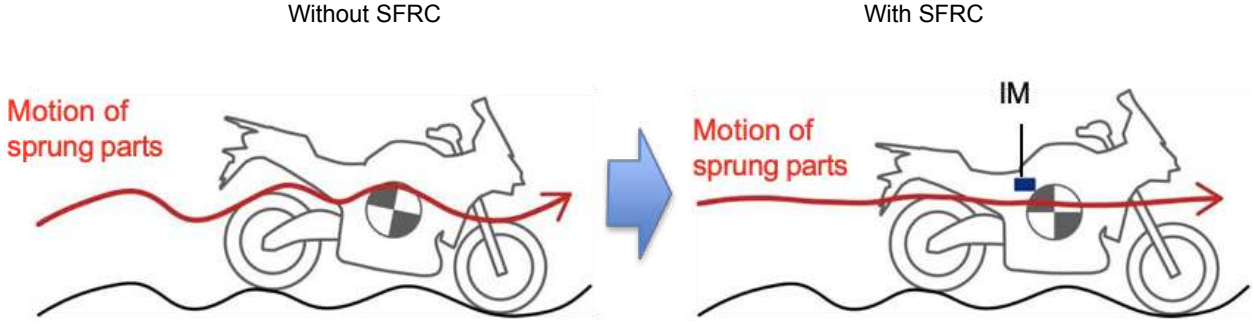
Original Suzuki programs integrated into SAES

SAES functions, aided with the inclusion of an IMU, include Suzuki Floating Ride Control (SFRC), a program that further improves tracking and comfort in response to road surface changes, Suzuki Velocity Dependent Control (SVDC), a program that monitors vehicle speed and optimises suspension settings for that speed, and Suzuki Deceleration Damping Control (SDDC), a program which smoothly converges changes in vehicle attitude due to braking and controls damping force to achieve an ideal pitch motion.

Suzuki Floating Ride Control (SFRC)

Input from the IMU and the front and rear suspension stroke sensors are used to monitor the motion of the motorcycle's sprung weight in relation to an imaginary reference point directly above from which the front and rear are suspended, in theory, as though hanging from a hook in the sky. In turn, the SCU (suspension control unit) adjusts the damper settings on the fly to keep the seat and handlebars stable while the wheels and tyres absorb the bumps on the road, improving manoeuvrability and comfort.

The advanced system utilised by the GSX-S1000GX is set to respond optimally at once to three types of motion and thereby respond to a wide range of riding conditions.



Though SFRC is always active, it is set to intervene only minimally when on smooth surfaces, so as not to affect on-road performance. Its effect becomes stronger when riding over uneven surfaces, but even then it does not attempt to completely level out the ride. This is because the rider perceives changes in the bike's posture and intuitively uses those to control it. Too smooth a ride would inhibit this feeling of connection between the rider, the motorcycle, and the road. SFRC adjusts damping force to match the Active Damping Control's settings (hard, medium, soft).

Suzuki Velocity Dependent Control (SVDC)

SAES also incorporates Suzuki's original Suzuki Velocity Dependent Control program. Under normal operation, the front and rear suspension reproduce the damping characteristics of each specified mode according to the suspension stroke speed. However, this program introduces the parameter of vehicle speed data received from the CAN bus to optimise damping control to match the current speed, thereby achieving positive handling at low speeds as well as reassuring stability at high speeds.

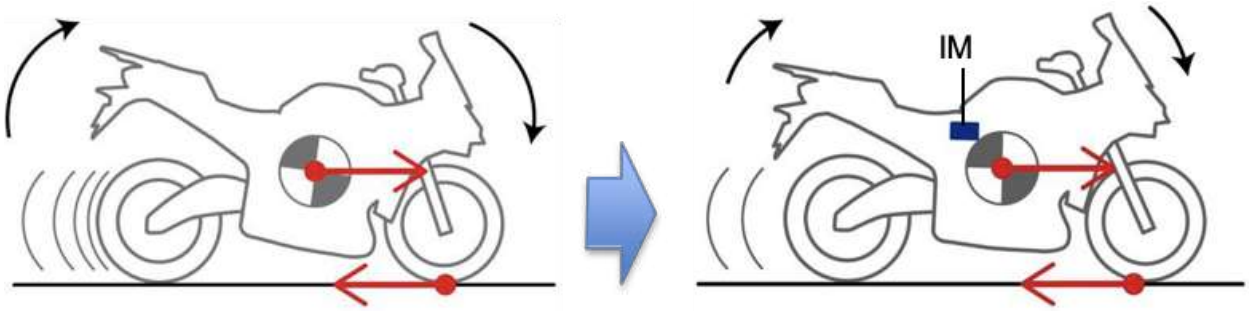
5. Chassis design

Suzuki Deceleration Damping Control (SDDC)

As with SVDC, this program reproduces the damping characteristics defined by each specified mode under normal operation. However, Suzuki Deceleration Damping Control applies deceleration G-force as a parameter based on the IMU data, and controls the optimal damping force so that the vehicle attitude change caused by the brakes converges smoothly. This provides an ideal pitch motion that does not interfere with the rider's action when braking, thus achieving a high level of comfort.

Without SDDC

With SDDC



6. Suzuki Intelligent Ride System (SIRS)

Introduction

The Suzuki Intelligent Ride System (SIRS) comprises a collection of advanced electronic rider assist systems. Each provides settings the rider can choose from freely to best suit their level of skill and experience, their current mood, and the current riding conditions. With each system designed and thoroughly tested, SIRS enables an exciting riding experience that inspires confidence and frees riders to concentrate on enjoying the journey.

The robust collection of systems custom-tuned for the GX aim not only to put the latest high-spec technologies in the hands of all riders, but also to make it easy for all riders to fully enjoy using them. The GX is the first motorcycle in the GSX-S series to adopt Suzuki Drive Mode Selector Alpha (SDMS-α), which features integrated management over power mode, Smart TLR Control, and Active Damping Control settings.

Other systems include the lean angle-sensitive Motion Track Brake System, cruise control, and Slope Dependent Control. As part of the suite of electronics, the GX also includes a ride-by-wire electronic throttle system, a bi-directional quickshifter, Suzuki Easy Start System, and low rpm assist.

6. Suzuki Intelligent Ride System (SIRS)
Suzuki Drive Mode Selector Alpha (SDMS-α)
The GX follows Suzuki's flagship Hayabusa model in adopting SDMS-α, which features integrated management of multiple advanced electronic control systems. The three integrated riding modes of SDMS-α control power output characteristics, as well as the level of traction control, which, on the GX, is integrated with Lift Limiter and Roll Torque Control, and Active Damping Control (with Suzuki Floating Ride Control). Riders can opt to use the factory default settings or customise some to match their needs or preferences more closely.

In addition, Suzuki's original new Suzuki Road Adaptive Stabilisation (SRAS) program works in conjunction with SDMS-α to seamlessly switch between settings that better smooth out the bumps when the GX rides uneven surfaces, and those that prevent interfering with positive response when riding on good roads.

SDMS-α comes with three factory settings:

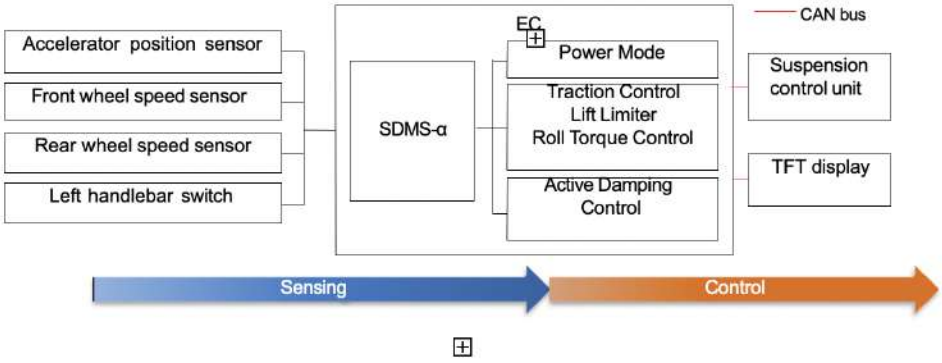
Mode A (Active) is designed for the more aggressive riding style of a sporty run on good roads, setting the power output mode to level one, the traction control system to level two, and the suspension's active damping control level to hard.

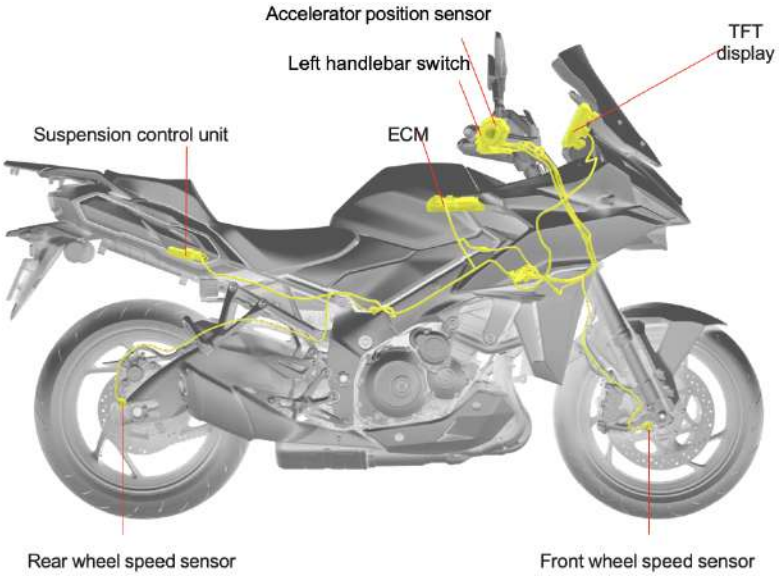
Mode B (Basic) is set up to deliver a satisfying balance of settings good for a broad range of riding situations, setting the power mode to level two, the traction control system to four, and the suspension's active damping control level to medium.

Mode C (Comfort) aims to prioritise comfort and controllability, particularly when riding long distances or in reduced grip conditions. It sets the power mode to level three, the traction control system to level six, and the suspension's active damping control level to soft.

Mode A (Active)	Mode B (Basic)	Mode C (Comfort)
		

6. Suzuki Intelligent Ride System (SIRS)
Suzuki Drive Mode Selector Alpha overview





6. Suzuki Intelligent Ride System (SIRS)
When riding on normal road surfaces:

	Suzuki Drive Mode Selector Alpha (SDMS-α)	**Mode A**	**Mode B**	**Mode C**	***No. of levels***
When riding on normal road surfaces	Power mode level	1	2	3	*3*
	Traction Control level (with integrated Lift and Roll Torque Control)	2	4	6	*7 + OFF*
	Active Damping Control level (with SFRC set to not interfere with performance)	Hard	Medium	Soft	*4 (3+"U")*

*Blue text denotes systems that operate in the background that the rider cannot modify.

Notes
Power mode level
- Level 1 delivers the sharpest response.
- Settings are fixed (eg, in mode A power cannot be changed from setting one).

Traction control level
- The higher the setting, the more proactive the system is in limiting wheel spin.
- The rider can change the traction control setting (eg, traction control can be set to level seven, even when using SDMS-α riding mode A).
- Lift Limiter and Roll Torque Control levels are determined by the traction control level setting and not user accessible.
- Turning off traction control also turns off Lift Limiter and Roll Torque Control.

Active Damping Control level
- The rider can select a different setting (eg, Active Damping Control can be set to soft, even when using SDMS-α riding mode A).
- The Suzuki Floating Ride Control (SFRC) level is determined by the Active Damping Control setting.
- The user-defined 'U' setting offers a choice of hard, medium, or soft suspension settings with separate adjustments of +/- three increments for the front and rear suspension, with the base setting at zero.

Riders can also customise some of the settings for the three integrated riding modes to suit their needs or preferences. While the power output settings for each SDMS-α riding mode are fixed, the rider can opt to select from one of the 7 available setting levels for traction control (or turn it off), and one of the four available settings for Active Damping Control.

6. Suzuki Intelligent Ride System (SIRS)

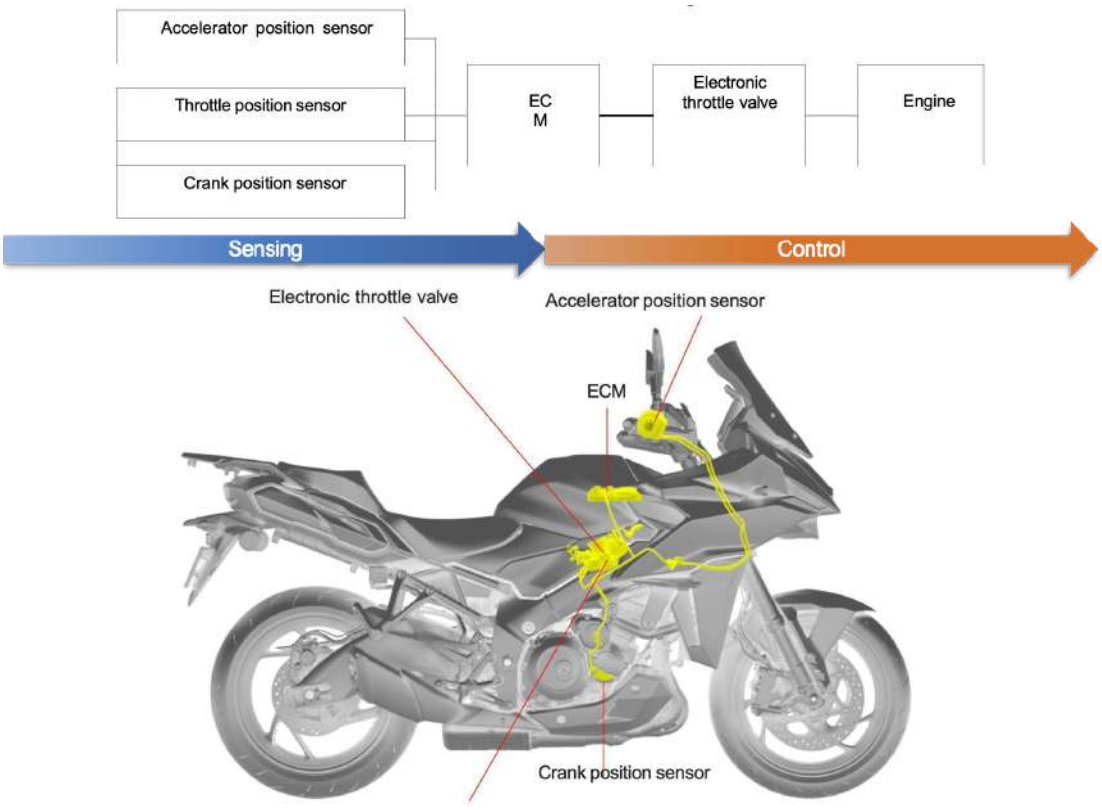
SDMS-α: power modes and control over engine output characteristics

The rider can select between three modes that deliver different power characteristics to match the conditions of the riding situation, surface conditions, or preferred riding style. The difference in modes is particularly noticeable when turning the throttle grip between a slightly open position to when it reaches the top of the mid-speed range under acceleration. The settings for each mode are tuned and tested to maximise the GX's capabilities as a luxury crossover machine, to build in the flexibility to adapt well to changing weather, road, and riding conditions, and to make the overall riding experience more enjoyable.

Power mode one provides the sharpest response as the throttle is opened. Tuned to deliver exciting acceleration and fully leverage the engine's power, it is well suited for enjoying aggressive runs on good surfaces in good conditions.

Power mode two reaches the same level of maximum output, but features a more linear curve with softer throttle response. The aim is to deliver a satisfying balance of settings that make a good fit for a broad range of riding styles and road conditions.

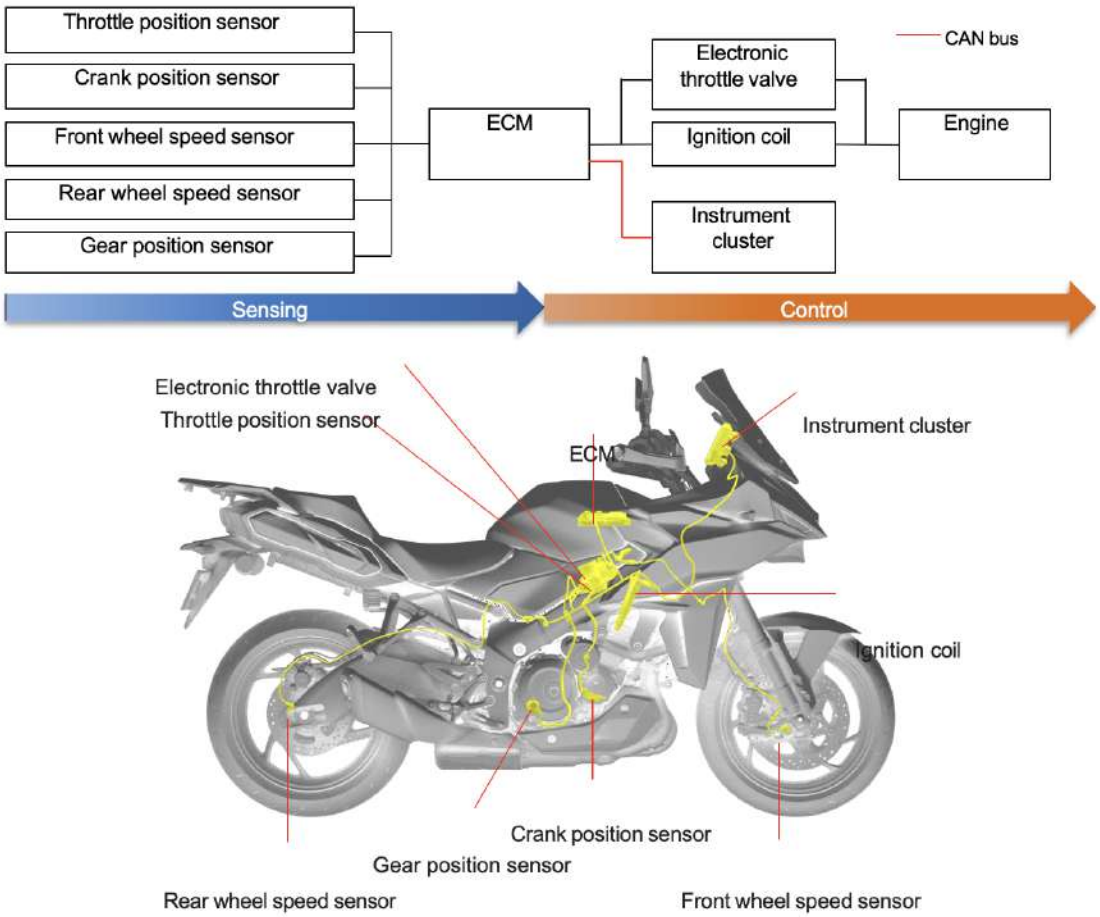
Power mode three prioritises comfort and controllability by offering the softest throttle response and more gentle torque characteristics. This setting is a good choice when riding long distances, or when carrying a passenger and gear, or in adverse weather conditions.



6. Suzuki Intelligent Ride System (SIRS)
SDMS-α: smart TLR (traction, lift and roll torque) control
Suzuki Traction Control System (STCS)
The Suzuki Traction Control System enables the rider to better control the bike in varying conditions. STCS not only reduces stress and fatigue but, by giving the rider greater control, it instils greater confidence regardless of their level of experience.

The traction control system on the GX is designed to support the fine incremental control of SDMS-α's integrated riding modes. In addition to the default SDMS-α settings, the rider can choose from one of seven selectable level settings to match the rider's preferences or the riding conditions of the moment, or opt to turn the system off. The higher the mode, the faster the control takes effect and the more proactive the system is in limiting wheel spin.

The system is programmed to continuously monitor front and rear wheel speed, engine RPM (as calculated using data from the crank position sensor), throttle position and gear position. It is designed to immediately limit power and help prevent slipping when an imminent loss of traction is detected by retarding the ignition timing and limiting the throttle opening.



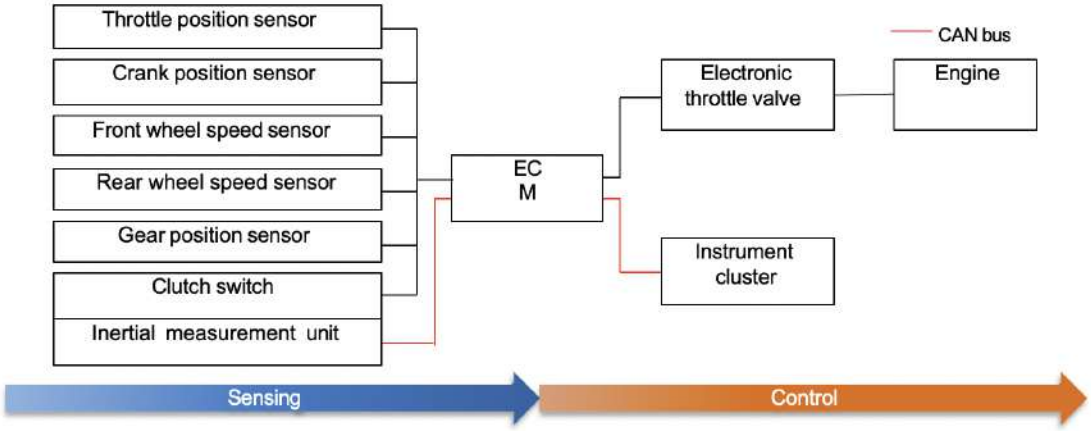
6. Suzuki Intelligent Ride System (SIRS)

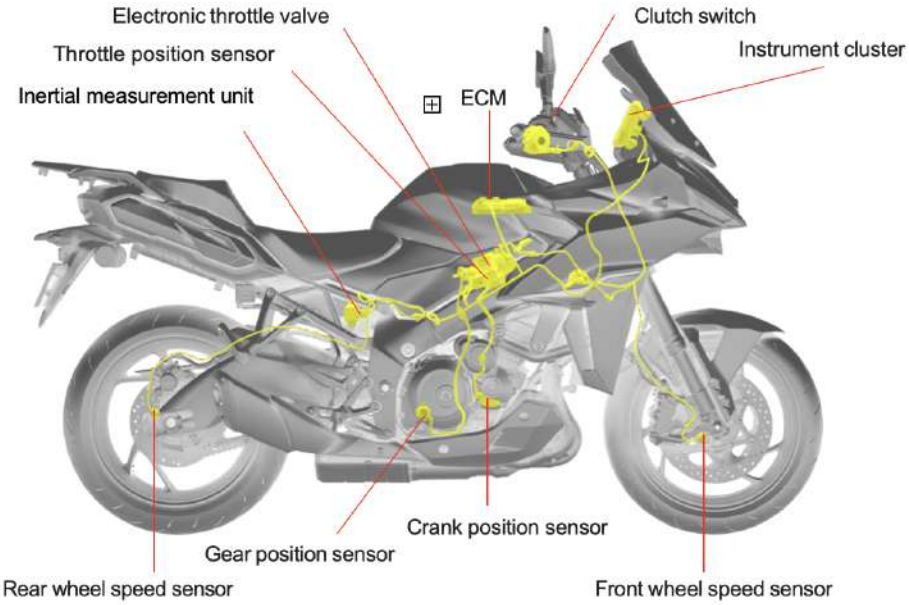
Lift Limiter

The GX adopts Lift Limiter - a system of anti-wheelie - which brings added peace of mind to riders by helping prevent the front wheel from lifting off the ground when accelerating. Lift Limiter works silently in the background, with its level of intervention setting being determined by the STCS level setting.

In addition to monitoring engine RPM (as calculated using data from the crank position sensor), the GX's ECU monitors throttle position, gear position and clutch switch status, and processes that data along with input from the front and rear wheel speed sensors and the IMU to determine the appropriate amount of output to deliver in response to operation of the electronic throttle control.

A flashing LF mark appears on the TFT dash panel to inform the rider when Lift Limiter is active.



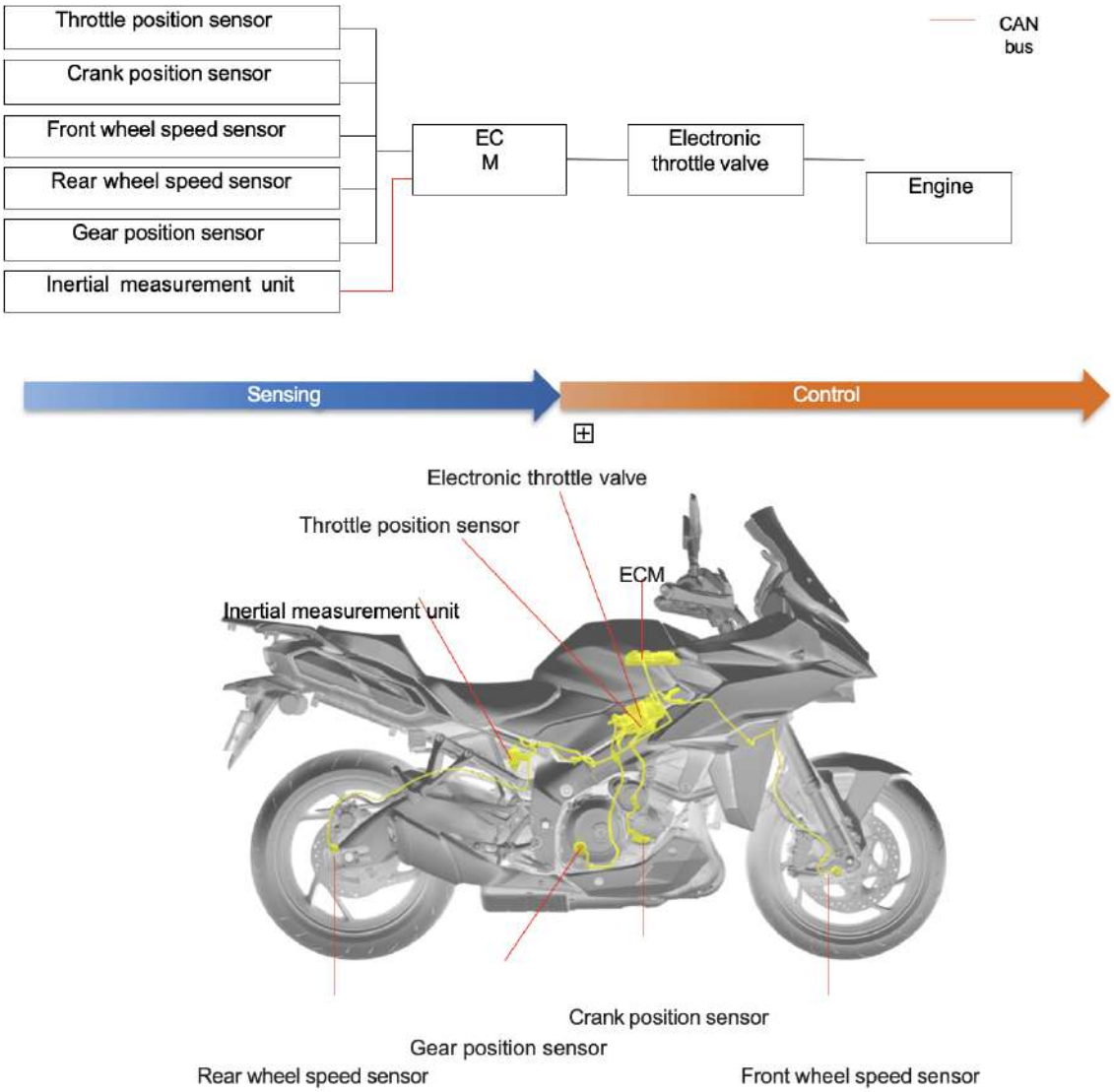


6. Suzuki Intelligent Ride System (SIRS)

Roll Torque Control

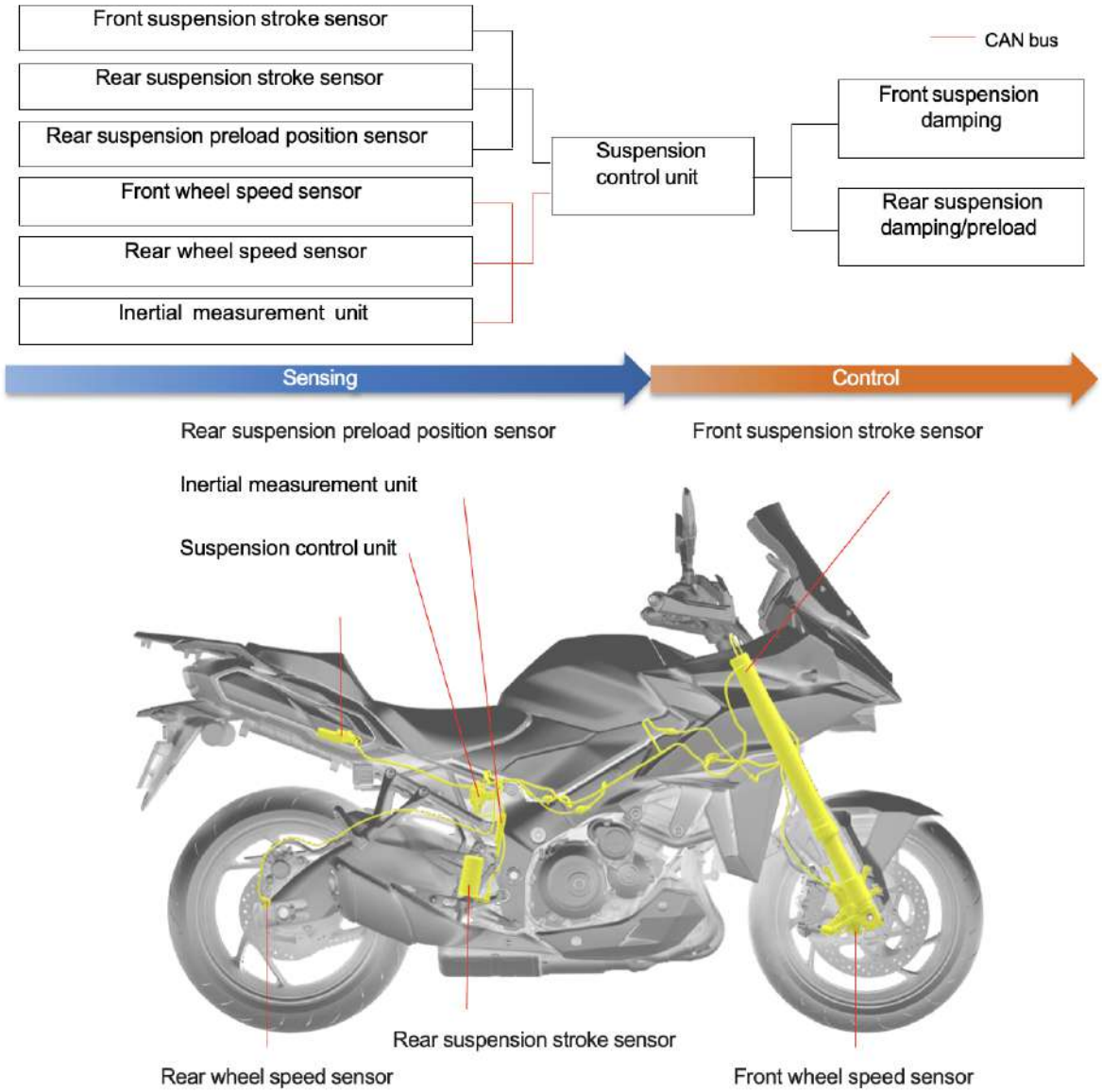
Roll Torque Control, a Suzuki first, is an intelligent system that, based on data received from the IMU and wheel speed sensors, calculates the bike's lean angle and speed to predetermine what level of power output and acceleration is optimal at that time, for example, when exciting a corner. It then reduces torque output before the motorcycle exceeds the amount of power the system deems necessary to clear the corner effectively. The result is an extra layer of preemptive protection that operates silently in the background, with its settings being determined by the STCS level setting.

The development team devoted considerable time and effort to fine tuning the settings for both Lift Limiter and Roll Torque Control so they work optimally in conjunction with the rider's selected STCS mode.



6. Suzuki Intelligent Ride System (SIRS)
SDMS-α: Active Damping Control

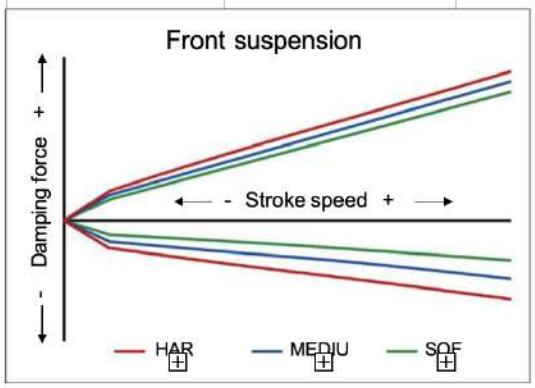
The Suzuki Advanced Electronic Suspension (SAES) on the GX offers four electronically controlled damping settings: hard, medium, soft, and a customisable user setting. The settings change automatically in accordance with the SDMS-α mode chosen by the rider, with the default being hard for SDMS-α's A mode, medium for B mode, and soft for C mode. However, the rider can also change how SDMS-α applies the respective settings. For example, if preferred, the rider can choose to have A mode use the medium, soft, or user damping setting rather than the default hard setting. Each mode is controlled to reproduce the specified damping characteristics in accordance with the stroke speed of the suspension.

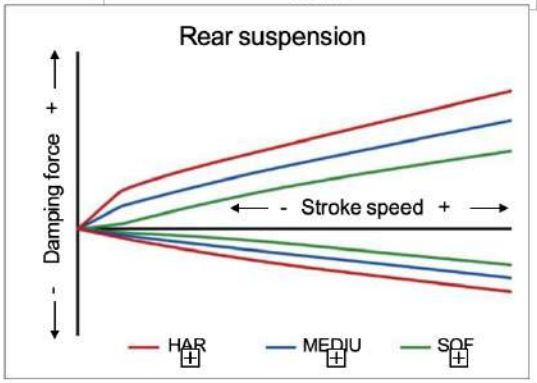


6. Suzuki Intelligent Ride System (SIRS)

In addition, when customising the user mode setting, the rider can independently adjust the front and rear settings by +/- thee increments, after selecting between a base setting of hard, medium or soft.

H (Hard mode)	M (Medium mode)	S (Soft mode)	U (User mode)
Fixed Front 0 / Rear 0	Fixed Front 0 / Rear 0	Fixed Front 0 / Rear 0	Customizable Front ±3 / Rear ±3* *The default setting is Front 0 / Rear 0

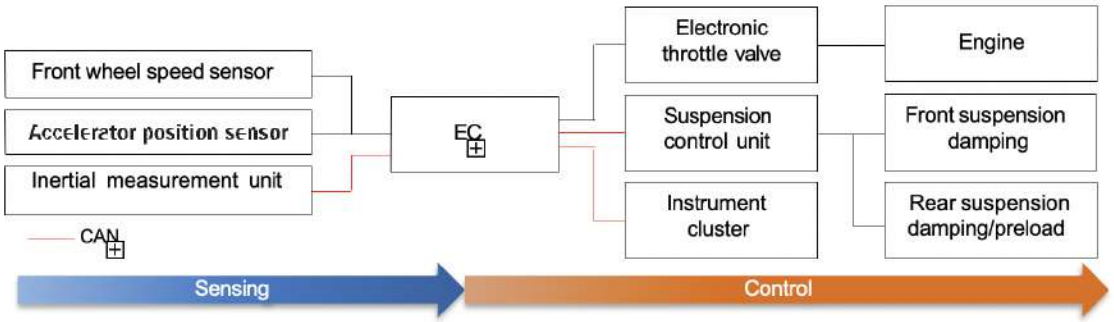


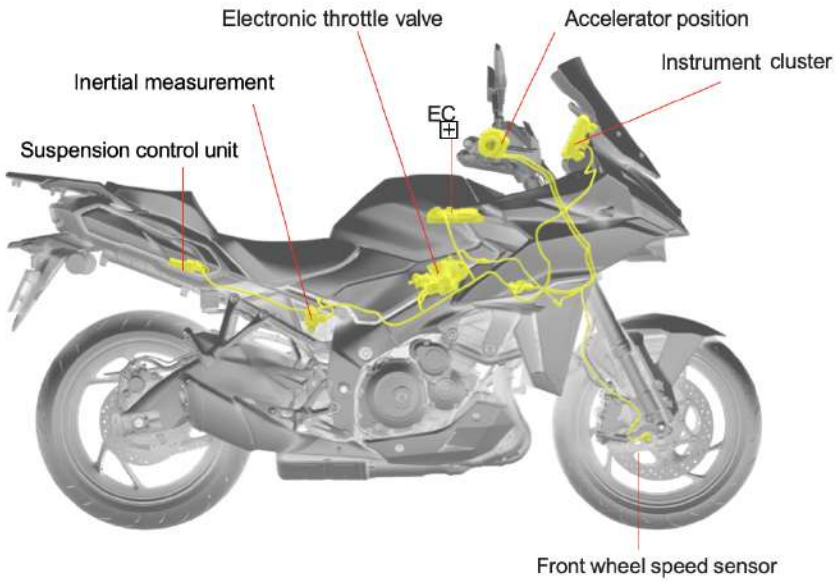


6. Suzuki Intelligent Ride System (SIRS)

Suzuki Road Adaptive Stabilisation (SRAS)

SRAS is Suzuki's original program that detects uneven road surfaces based on input from the IMU and wheel speed sensors. On normal road surfaces, the GX uses suspension settings that emphasise responsiveness. However, when the SRAS detects the road surface to have changed to something uneven surface, such as cobblestones, SRAS automatically triggers stronger Suzuki Floating Ride Control (SFRC) to help smooth out the ride and adjusts the electronic throttle valve settings to deliver softer, more controllable throttle response. When the GX returns to a smooth road surface, SRAS deactivates and SFRC returns to a setting that does not interfere with on-road dynamic performance. As a unique system, it provides performance only offered by Suzuki.





6. Suzuki Intelligent Ride System (SIRS)

When riding on uneven or undulating surfaces:

Red text indicates changes to settings when SRAS is activated

	Suzuki Drive Mode Selector Alpha (SDMS-α)	A (Active) mode	B (Basic) mode	C (Comfort) mode	No. of levels	Changes when SRAS is activated
	Power Mode level					
When riding on cobblestones or uneven surfaces (= with SRAS active)	+ ETV control active for gentler throttle response	1	2	3	3	*1
	Traction Control level (with integrated Lift and Roll Torque Control)	2	4	6	7 + OFF	None
	Active Damping Control level (with SFRC set for a smoother ride)	Hard with SRAS	Medium with SRAS	Soft with SRAS	4 (3+"U")	*2

*1: Adjusts the electronic throttle valve settings to deliver softer throttle response.

*2: Increases the level of SFRC intervention.

6. Suzuki Intelligent Ride System (SIRS)
Automatic rear suspension modes
The rear suspension's spring preload settings are electronically controlled, making it easy for a rider to use a handlebar switch to quickly choose between one of the four available modes they find best suited to their immediate needs or preferences.

Auto mode is a user-friendly mode that allows anyone to easily enjoy the recommended automatic settings. This mode features auto-levelling, which detects changes in chassis posture when a passenger mounts or dismounts, or when luggage is added or removed and, based on the damper stroke position, responds by automatically compensating to maintain the appropriate posture.

Change in chassis posture when a passenger gets on

Automatic levelling

In addition, when set to auto, the system calculates the current load weight based on the rear suspension stroke and jack preload position, and automatically corrects the damping for both front and rear. This improves the movement of sprung mass under load and further stabilises ride comfort under load conditions.

Riders who prefer to choose their own settings can select between one of three dedicated manual modes: single rider, single rider plus luggage, or tandem (with or without luggage). Damping compensation is not active when using these three manual modes. In addition, the preload setting for auto mode can be adjusted by +/- three increments and the three manual modes can be adjusted by +/4 four increments to match the rider's needs more finely.

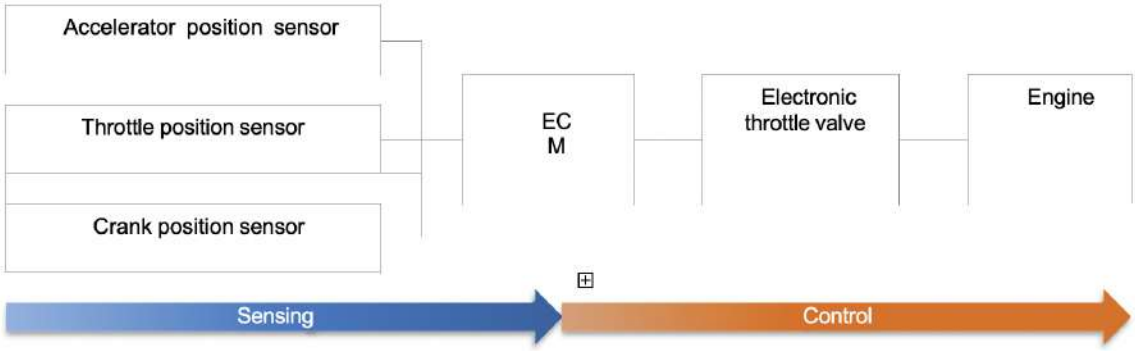
6. Suzuki Intelligent Ride System (SIRS)

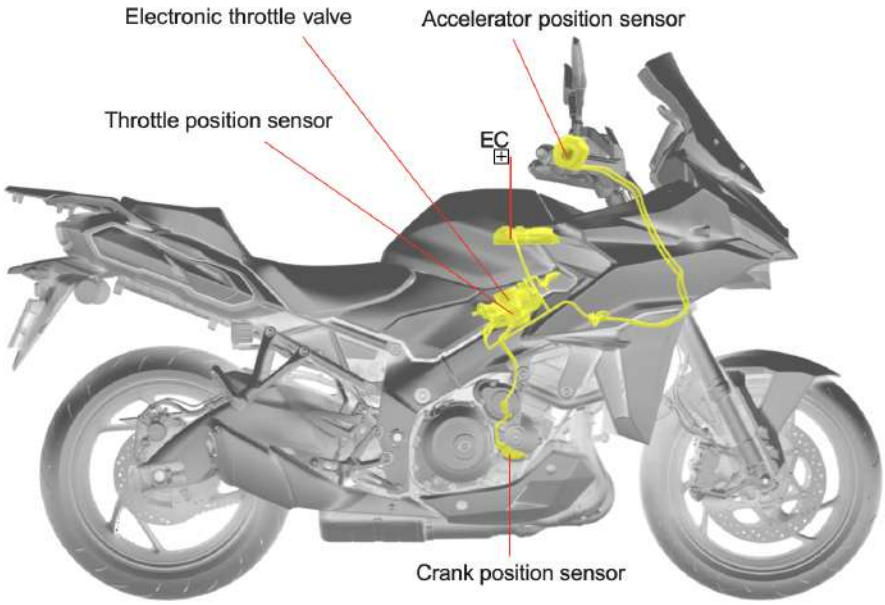
Mode setting display	Auto mode	Auto
	Manual modes	Single Rider
		Single Rider + Gear
		Tandem (with or without gear)

The front fork spring preload settings can be adjusted manually using a single adjuster on the lower right fork. Both the right and left fork contain coil springs, and the preload setting is manually adjusted here on the right fork.

6. Suzuki Intelligent Ride System (SIRS)
Ride-by-wire electronic throttle system
The ride-by-wire electronic throttle system leverages the ECU to control the action of the throttle valves and better control the relationship between throttle action and engine output characteristics. The benefit of this is that individual settings can be tuned to match each of the SDMS-α modes. As a result, throttle action responds faithfully to the rider's intention across the range of mode settings. The system also allows for the introduction of other advanced systems such as the bi-directional quickshifter.

This system gives the rider the added assurance of greater controllability over the engine at the most commonly used engine speeds, and helps harness its power effectively. It also benefits the rider by improving controllability when they open the throttle to accelerate out of a corner while providing a natural response and linear control similar to that of conventional throttle operation.

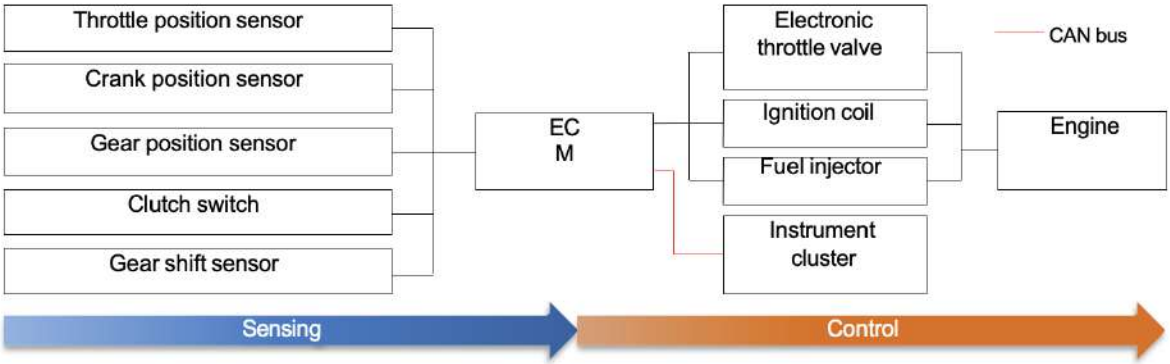


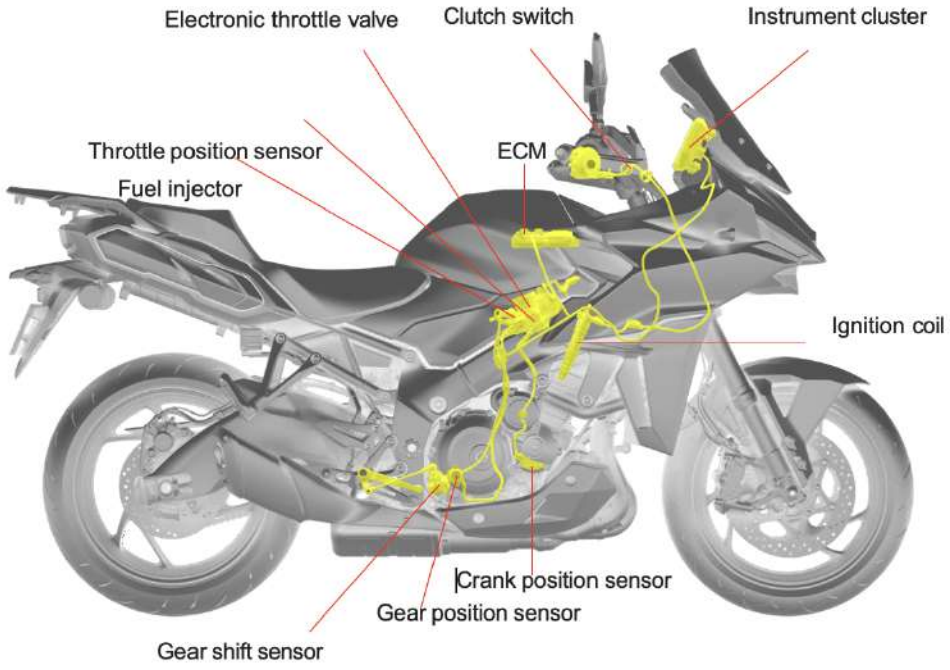


Improved feel to initial throttle action
A small amount of play added in the APS (Accelerator Position Sensor) adds weight to the feeling as the throttle grip is first twisted. The 1mm of play added to the action helps jerkiness from unintentional inputs caused by things like bumps in the road.

Bi-directional quickshifter
The bi-directional quickshifter enables the rider to shift up or down without operating the clutch lever. As well as the seamless acceleration and the performance benefits, it also reduces fatigue on long rides.

When activated, the system automatically interrupts power delivery just long enough when accelerating or maintaining steady speed to deliver a smoother ride and almost uninterrupted acceleration as the rider shifts up. When decelerating, the system automatically opens the throttle valves just enough to increase rpm and match engine speed to the next-lower gear ratio without manually blipping the throttle or using the clutch.

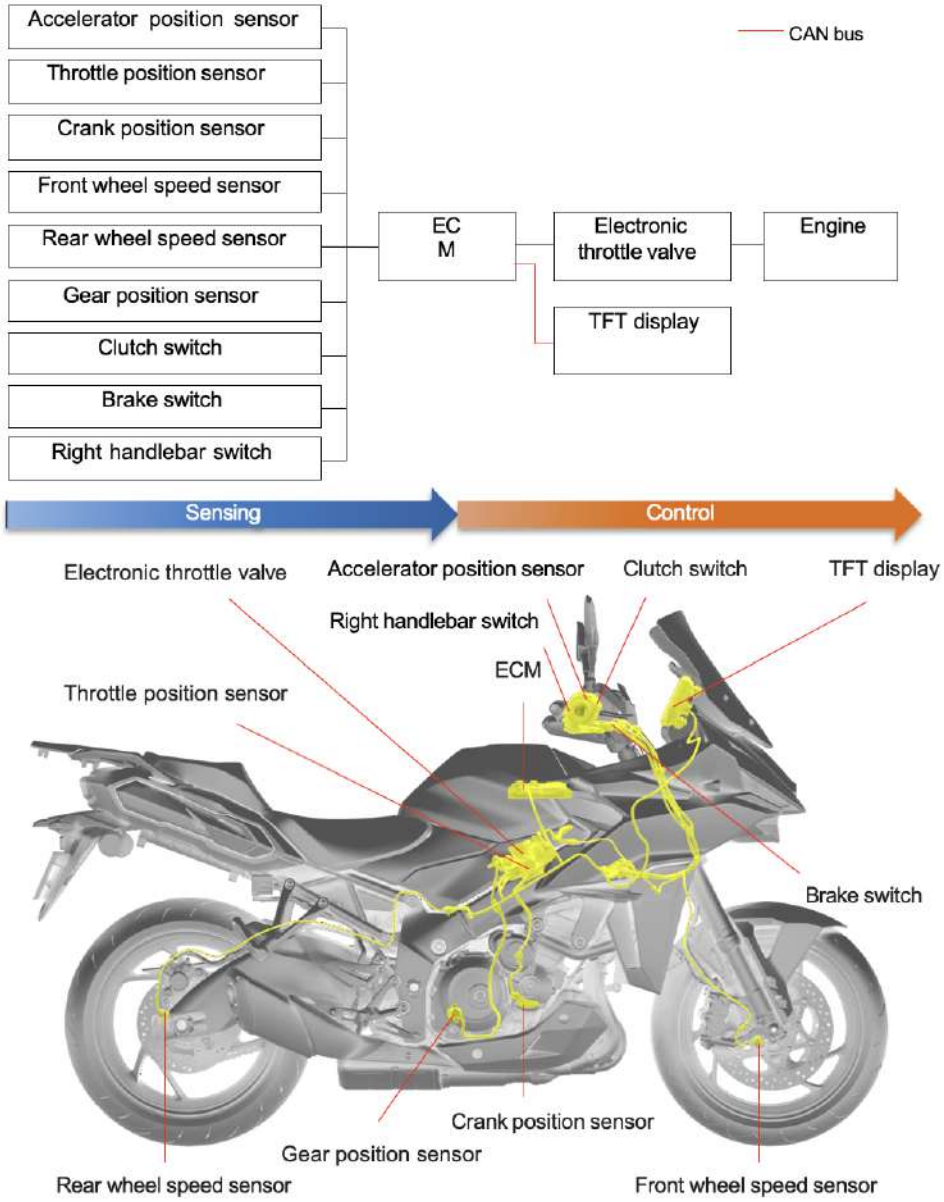




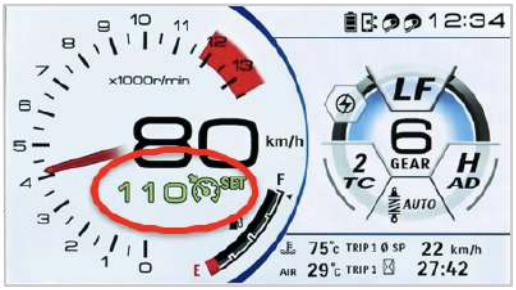
6. Suzuki Intelligent Ride System (SIRS)

Cruise control

The cruise control system allows the rider to maintain a set speed without operating the throttle. This helps reduce fatigue when touring long distances, particularly when travelling at constant speed on motorways. The chosen setting appears on the colour TFT instrument panel and the speed can be easily adjusted upward or downward using the plus or minus switch on the left handlebar. Cruise control can be set at speeds between 20 mph to 110 mph when riding in second gear or higher. The handy resume function re-engages the system and accelerates to the most recent speed setting after cancelling. The system has been updated, when compared to the system found on the GSX-S1000GT and other Suzuki models equipped with cruise control, to now allow the rider to shift up or down using the b-directional quickshifter without it cancelling the cruise control. This makes the GX more comfortable, more convenient, less tiring and easier to operate on long rides by eliminating the need to reset cruise control after each shift.



6. Suzuki Intelligent Ride System (SIRS)



Speed setting for cruise control

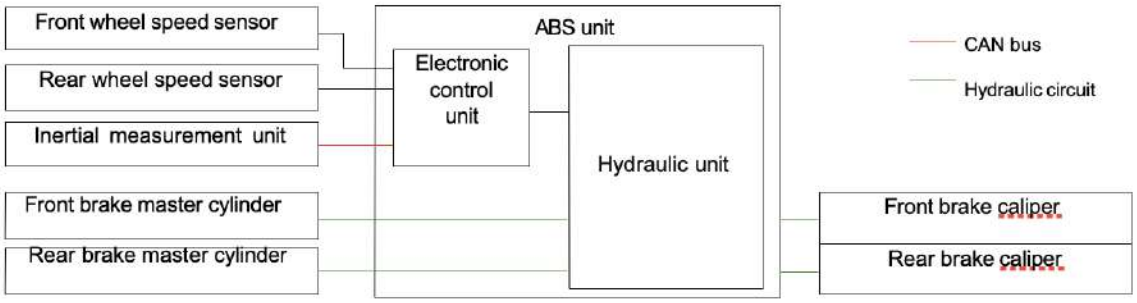
Left handlebar switch

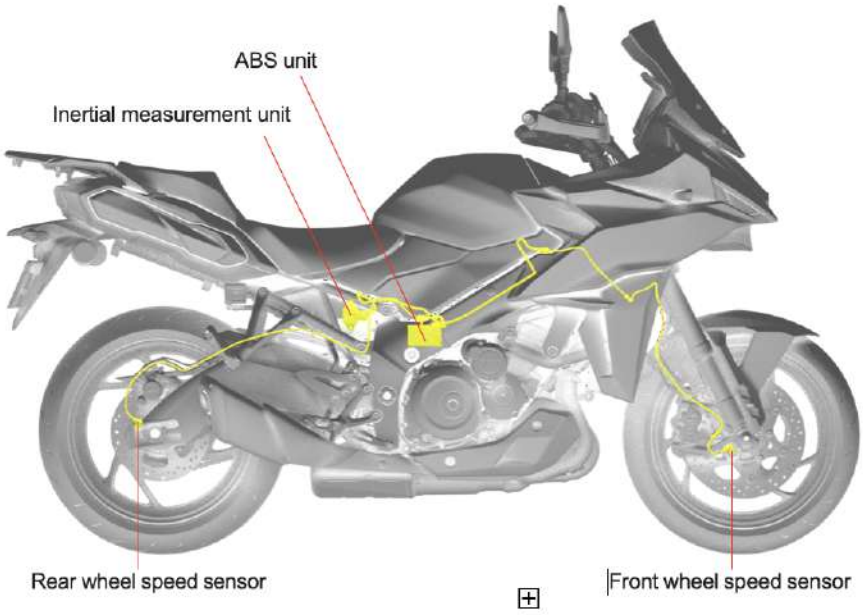
Right handlebar switch

6. Suzuki Intelligent Ride System (SIRS)

Motion Track Brake System

With the Motion Track Brake System the ECU determines when intervention is called for by monitoring input from the front and rear wheel speed sensors along with vehicle posture data from the IMU. When it is, the ABS unit's hydraulic unit controls brake pressure to reduce the impact of sudden braking force, making the bike less likely to try to push itself upright or lose traction. As a result, the bike maintains its radius and lean angle, allowing the rider to follow their intended line through the corner. If a rider panics and brakes heavily in a corner, the system assists in maintaining stability while slowing the machine. The Motion Track Brake System supports sure and confident braking in various riding situations.

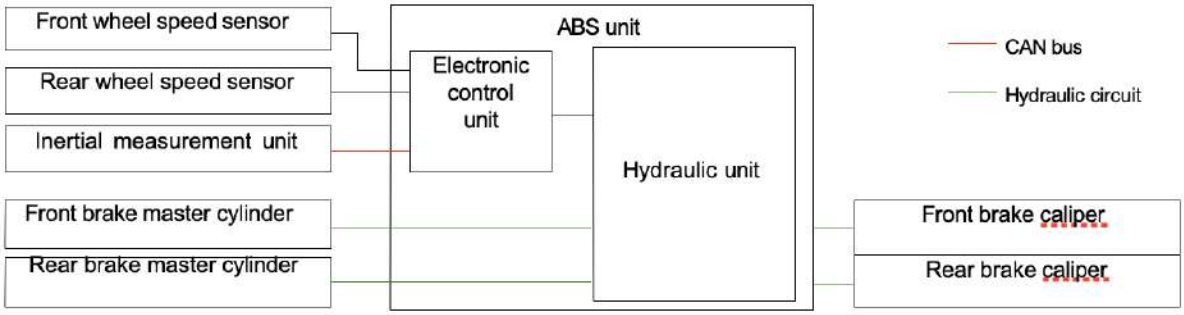


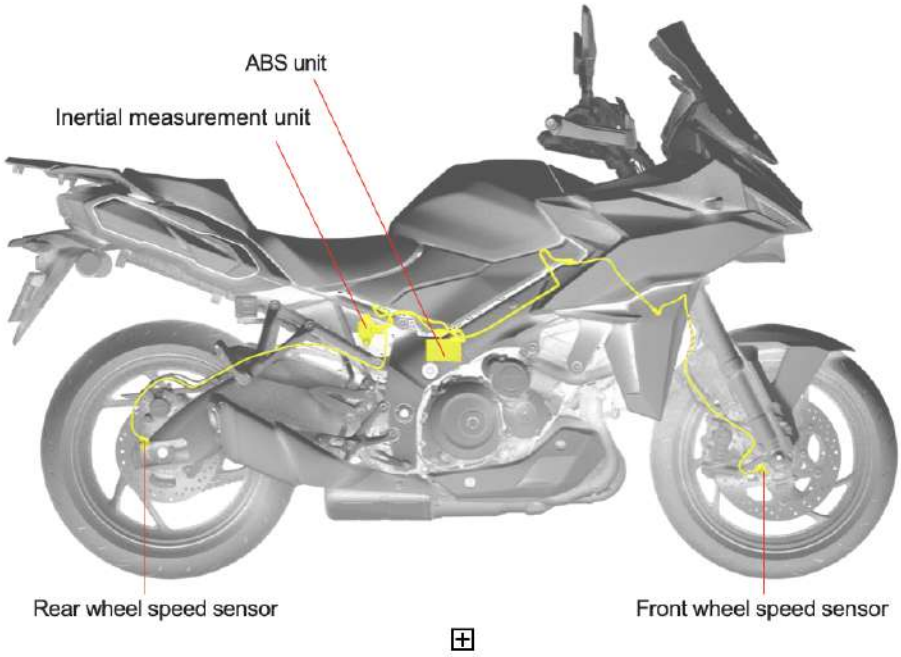


6. Suzuki Intelligent Ride System (SIRS)

Slope Dependent Control System

This system prevents rear wheel lift when braking downhill, resulting in a more stable ride. The ABS unit uses input from the IMU to monitor the bike's posture and, when the rider applies the brakes, its hydraulic unit controls brake pressure to deliver the optimum setting to match the angle of inclination. The amount of rear lift control is continuously adjusted to match the current slope angle, and this results in providing more stable braking.





6. Suzuki Intelligent Ride System (SIRS)

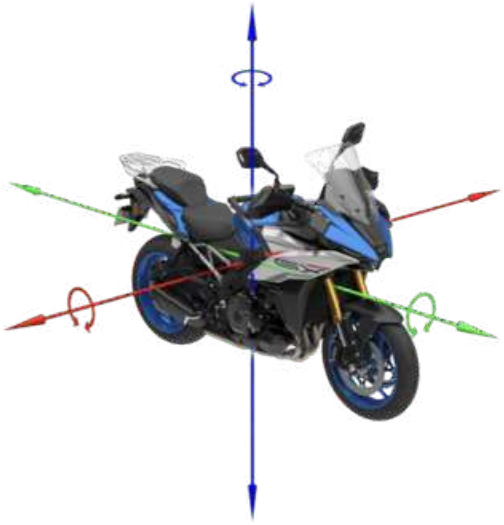
Suzuki Easy Start System

This system lets the rider start the motorcycle with one quick press of the starter button. There is no need to pull in the clutch lever when the transmission is in neutral, and the starter motor automatically disengages the instant the engine fires up, adding more rider convenience.

Low-RPM assist

Suzuki's low-RPM assist monitors engine rpm, gear position, throttle position, and clutch switch data as the rider releases the clutch lever to pull away from a standing start, or when riding at low speeds. It is programmed to help prevent engine speed from dropping excessively as the rider releases the clutch lever to ensure smoother starts. It also promotes more confident riding by helping counteract drops in engine speed when riding in stop-and-go traffic, or when doing U-turns.

6. Suzuki Intelligent Ride System (SIRS)
Supporting technologies
Inertial Measurement Unit (IMU)
The GX adopts an IMU from Bosch. This IMU integrates accelerometers and gyroscopes in a single compact package that measures angular rate and acceleration in six directions to constantly monitor pitch, roll, and yaw movement. Features that use data provided by the IMU include Lift Limiter, Roll Torque Control, Active Damping Control, SRAS, Motion Track Brake System, and Slope Dependent Control system.



Six axis IMU

Bosch IMU

Controller Area Network (CAN bus)
The GSX-S1000GX uses a robust CAN bus that enables the ECU to communicate with the 6.5-inch colour TFT instrument panel, as well as the IMU, SCU and ABS. Its capabilities help the utilisation of the advanced control systems.

Engine Control Unit (ECU)
The ECU provides state-of-the-art engine management that contributes to the operation and optimisation of several critical systems.

ECU

7. Electric equipment

6.5-inch colour TFT multi-information display

The GSX-S1000GX's instrument cluster uses a 6.5-inch colour TFT screen designed to be easy to see and understand, and to provide the rider with instant access to desired information. It achieves this, even with the comprehensive suite of electronic assist systems and other information vying for space. Developed specifically for use on motorcycles, the large display also features a scratch-resistant surface, an anti-reflective coating that improves visibility in bright light, as well as the ability to connect to smartphones.

In addition to keeping the rider fully aware of all the bike's systems, settings, and real-time operating status, the TFT screen can also display maps, incoming and outgoing phone calls, contacts, and music when connected to the rider's smartphone for even greater convenience, functionality, and fun. The look is one of high quality that helps instil pride of ownership.

Information readouts include:

- Speedometer
- Tachometer
- Riding range
- Cruise control setting
- Odometer
- Dual trip meter
- Gear position
- Water temperature
- Ambient temperature
- Smartphone battery level
- Voltmeter
- RPM indicator
- Average fuel consumption (one and two)
- Instant fuel consumption
- SDMS-α mode / SRAS (when active)
- Traction control mode
- Lift Limiter (when active)
- Active Damping Control mode
- Automatic Rear Suspension Mode
- 12-hour clock
- Smartphone connection status
- Rider-passenger intercommunication (Bluetooth®)
- Fuel gauge

LED indicators flanking the display include the left turn signal indicator, malfunction indicator light, neutral indicator light, master warning indicator, high-beam indicator light, right turn signal indicator, traction control indicator, low oil pressure warning light, ABS indicator, and coolant temperature warning light. All are designed for easy recognition.

7. Electric equipment

From a design perspective, the display uses exclusive graphics, including blue background lines that convey the Suzuki brand identity. It also offers manual or automatic switching settings for the day (white) and night (black) display modes that maximise visibility at any hour and in any riding situation.

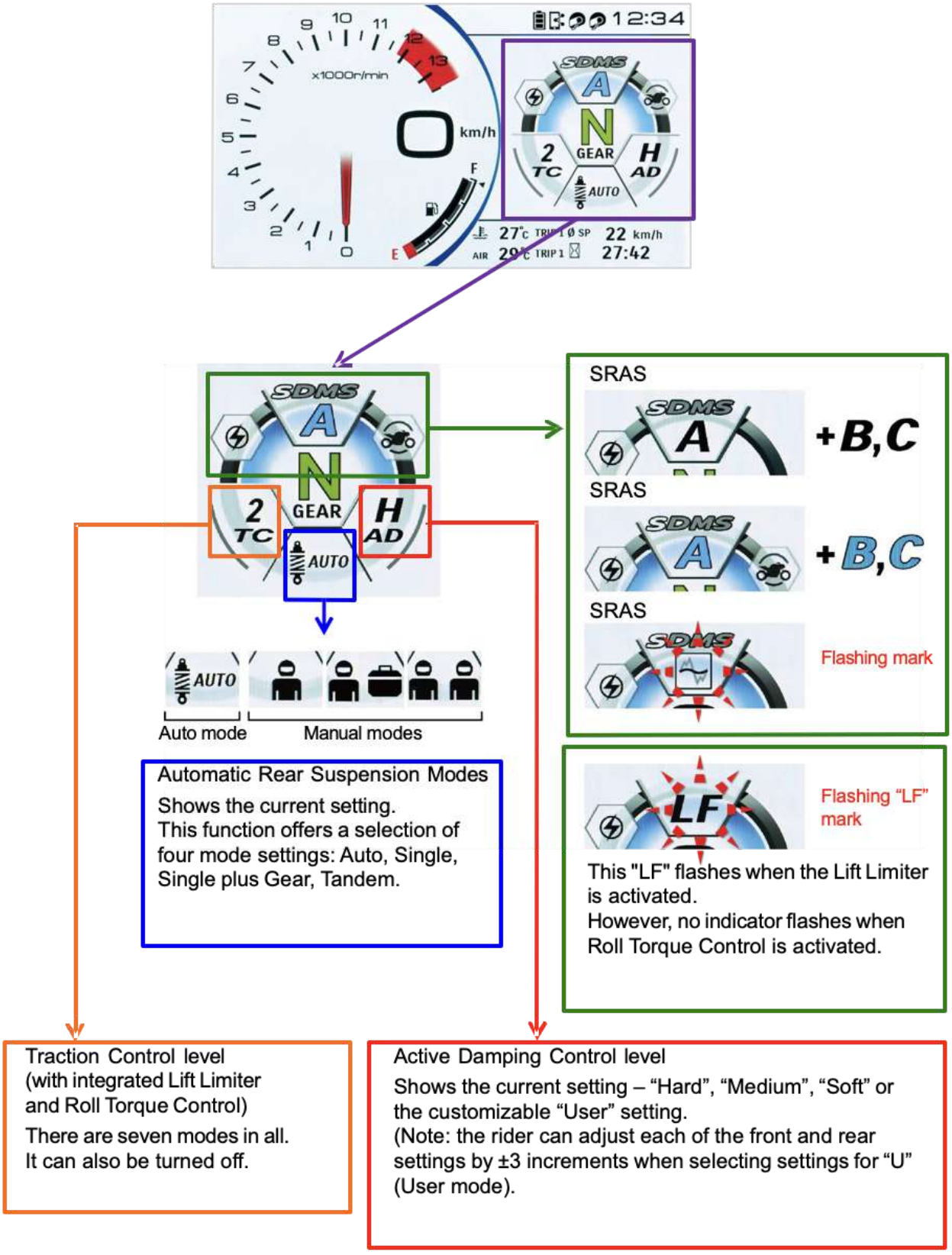
Home screen (day)

Home screen (night)

Menu screen

Setting screen

7. Electric equipment



7. Electric equipment

Smartphone connectivity

The rider can connect a smartphone running iOS or Android™ using wireless LAN and Bluetooth®, and can charge their smartphone using the dedicated USB outlet on the left side of the screen.

The 6.5-inch TFT display is designed to support the smartphone connectivity features of the Suzuki mySPIN app. In contrast to competing products that employ systems developed for use in cars, the GSX-S1000GX adopts hardware and software designed specifically for motorcycle use. As such, Suzuki mySPIN works seamlessly on the TFT screen to enrich the functionality of smartphone connectivity and provides a smart cockpit environment. By installing the free Suzuki mySPIN app on their phone, the rider can access an array of useful functions from the five bundled apps. The apps used are developed for motorcycles, with the screen mirrored on the cluster's TFT screen to present a familiar look and intuitive feel to the switches on the left handlebar when accessing features and content, or to change settings while riding.

mySPIN

SUZUKI

Download on the App Store

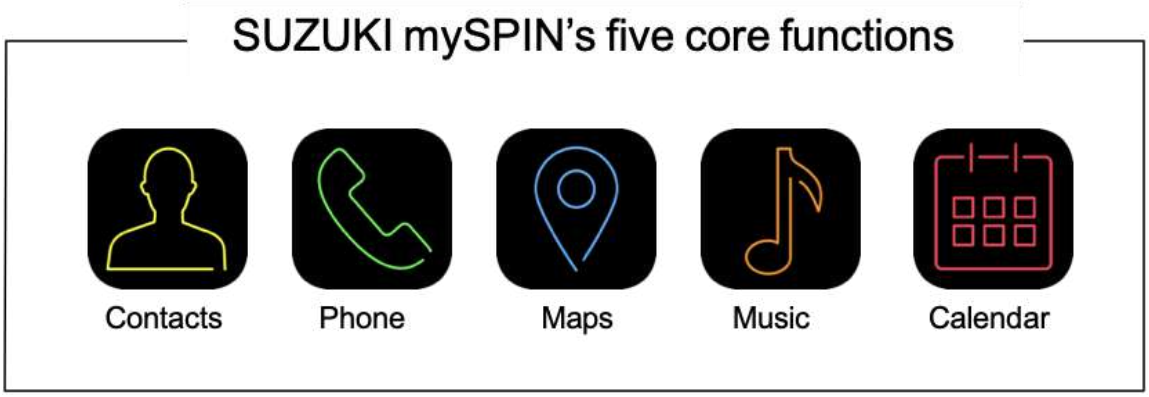
GET IT ON Google Play

7. Electric equipment

Left handlebar switch

mySpin homescreen display

7. Electric equipment



Contacts
The system can access the contacts app on the smartphone and inform the rider who is calling on the phone. Calls can also be placed by selecting a contact from the list.

Phone
The system can place phone calls, either dialed directly or from the contacts app, and can display the rider's call history. This can be done without stopping the bike, and so it is very convenient.

Maps
The rider can view their current location on the map without having to download any third-party map data, and can search for destinations and get routing information while zooming in and out using the switches on the left handlebar.

Music
The rider can use a Bluetooth® headset to listen to music from their smartphone's music library, and the pillion can listen along provided they, too, are wearing a Bluetooth® headset connected to the system.

Calendar
The rider can display calendar entries from their smartphone on the TFT screen and check scheduled events and reminders. The combination of Suzuki mySPIN and the TFT screen makes for a richer and more pleasant riding experience.

7. Electric equipment

LED headlights

The vertically stacked pair of distinctive hexagonal LED headlights employ a bright mono-focus light source that provides the rider with a clear view of the road ahead. In terms of design, the vertical orientation of the thin, compact headlight assembly creates a sharp look with unique character. By tucking the high-beam headlight away in the blacked out region below the protruding nose, the single compact ‘eye’ of the LED low-beam headlight further highlights the slim look of the front when lit on its own.

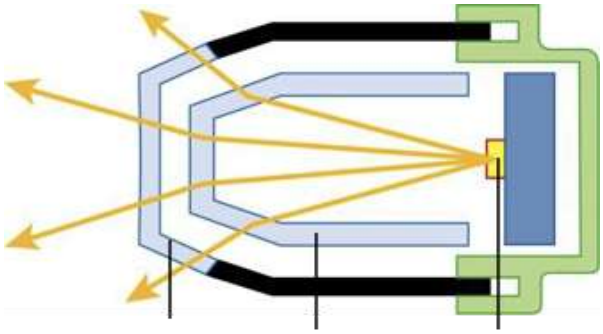
Headlights off

Low beam

High beam

LED position lights

Sharp, compact surface emitting LED position lights flank the headlights along the sides of the front cowl. These lights feature an upswept angle and narrow slit design that add to the distinctive look of the front face.



7. Electric equipment

LED front indicators

The LED front indicators are mounted in thin bar-shaped housings that extend from the sides of the cowling.

LED rear combination light and indicators

The rear combination light and indicators use LEDs for high visibility and long life. With a clear lens covering the LEDs, the design of the rear combination light provides a premium feel.

8. Colour lineup

Metallic Triton Blue (YSF)

Glass Sparkle Black (YVB)

Pearl Matt Shadow Green (QU5)

9. Specification

Overall length			2,150mm (84.6in.)
Overall width			925mm (36.4in.)
Overall height			1,350mm (53.1in.)
Wheelbase			1,470mm (57.9in.)
Ground clearance			155mm (6.1in.)
Seat height			845mm (33.3in.)
Kerb mass			232kg (511lbs.)
Engine type			Four-stroke, four-cylinder, liquid-cooled, DOHC
Bore x stroke			73.4mm x 59.0mm (2.9in. x 2.3in.)
Engine displacement			999cc (61.0 cu. in.)
Compression ratio			12.2 : 1
Fuel system			Fuel injection
Starter system			Electric
Transmission			Six-speed constant mesh
Suspension	**Front**		Inverted telescopic, coil spring, oil damped
	Rear		Link type, coil spring, oil damped
Rake / trail			25.5° / 97mm (3.8in.)
Brake		**Front**	Disc, twin
		Rear	Disc
Tyres		**Front**	120/70ZR17M/C (58W), tubeless
		Rear	190/50ZR17M/C (73W), tubeless
Ignition system			Electronic ignition (transistorised)
Fuel tank capacity			19L
Oil capacity (overhaul)			3.4L
Fuel consumption			45.47mpg in WMTC
CO_2 emissions			144 g/km

Ends