

FORZA S

Product Manual



Honda launched the innovative scooter "Junoo K type 190cc" in 1954, and in 1961 Junoo M8 equipped with a constant-speed badalini hydraulic transmission. The development of scooters that are "more enjoyable, comfortable, and convenient vehicles" since the genesis, including the launch of O (horizontally opposed two-cylinder 125cc) and the M85 (170cc) in 1962, we have been focusing on. Then, in the early 1980s, an unprecedented scooter boom broke out in Japan. In 1984, while 50cc class small displacement scooters dominated the mainstream, in 1984, they launched the Spacey 250 Freeway 250, which aims to achieve "fun, farther, faster, and freedom" with the aim of achieving "two people fun, farther, faster, and freely", and in 1986, by launching the "Fusion 250cc", which is the name of the cruising scooter, the image of the scooter that was once a practical one-sided it was renewed. In 1997, we also announced the "Forsite 250cc", a high-dimensional fusion of agile sports performance and comfortable ride comfort. In order to realize the joy of our customers to make life more enjoyable, comfortable, and convenient, we always propose new value through the development of various technologies ahead of the times and the improvement of continuous convenience. We have been actively working on 250cc class scooters. In 2000, we released "Forza" based on the concept of "New Stylish Sports". Sporty driving performance, of course, combined with combination brakes (front and rear wheel interlocking brakes), reliable and convenient functions such as large capacity storage, commuting, commuting to school was able to get tremendous support from a wide range of users from leisure use.



Then, in Forza, introduced a variety of advanced technologies, in 2004, the world's first * electronically controlled belt converter transmission mechanism "Honda S Matic" as a motorcycle, omitting annoying key operation, smart card key (bidirectional communication electronic matching key) system with both theft deterrent effect, large storage space corresponding to long objects and two full-face helmets, It is equipped with pgm-FI (electronically controlled fuel injection system) with excellent fuel efficiency improvement and environmental support. In 2005, we established new standards for middle-class scooters that are enjoyable to ride with outstanding convenience and high environmental performance, including the abs (anti-lock brake system). In 2006, "Forza" was equipped with an evolved S-matic with the first *one-stage auto-shift mode as a motorcycle that inherits sports DNA and allows you to enjoy exhilarating and sporty line-ups depending on various driving conditions such as winding roads, and achieved a "comfortable fan ride" in conjunction with the combination ABS front and rear wheels. In order to create a more luxurious taste, we also proposed "comfortable packaging" equipped with audio speakers that can enjoy music comfortably while driving. (※Honda research)

We think that forza Si was able to respond to the change of the age and the change of the customer's sense of values, and to be able to satisfy the sensibility of the customer by constantly reading and evolving the future of the age. In order to expand the joy of active life-oriented customers and connect them to the next generation, we developed parts procurement on the assumption that better products would be produced in Thailand from the perspective of "high quality". By thoroughly pursuing the specifications that can be procured parts globally, we have achieved high quality with a local parts procurement rate of 90% in Thailand. Forza, which debuted in developed countries, is a sit-in* scooter that covers everything from moving in the city to long-distance travel using highways in a relaxed and powerful run, in response to emerging countries with growing needs. Even in this forza Si, we also provide high-quality high performance backed by Honda's "environment", "safety" and "FUN" technologies.

In developing Forza Si, the development team thoroughly discussed setting goals from a global customer perspective. The user's value standards for motorcycles are changing not only as a means of transportation, but also as a means of expressing their own and in the direction of seeking the fulfilment of the mind, which is fulfilled by owning them. In keeping with these lifestyle changes, we aimed to create an omnidirectional 250cc scooter that can be used and self-expressed actively, mainly in developed countries, with more users choosing products with more attractive personalities. It is my desire as a development manager to feel the joy of owning to as many customers as possible all over the world.

Head of Development Officer, Scooter Series, Honda Research Institute, Inc.

KENICHI SUEDA



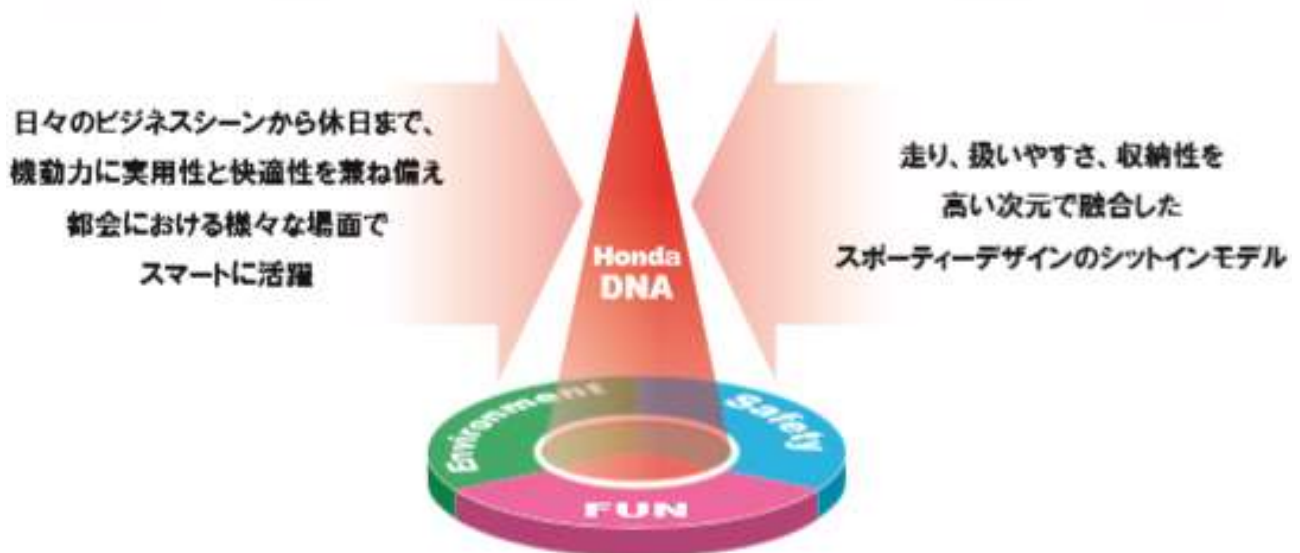
In the development of the new Forza Si, we thoroughly focused on the design and balanced ease of handling and mobility at a high level by adopting a simple and compact frame body with the exhilarating and compact output characteristics unique to the 250cc scooter in addition to the original convenience of the scooter. I wanted many people to feel that Forza Si is more familiar and to experience its appeal.

JUST FIT! DYNAMIC ALMIGHTY COMMUTER

- Engine to achieve low fuel consumption even though it is an exhilarating driving taste and easy-to-handle output characteristics
- Frame body that combines practicality and comfort
- To satisfy the joy of owning in a unique, urban and sophisticated design
- a wide sit-in scooter of the range of use in close contact with life

Our development team returned to the origins of sports scooters to meet this requirement and aimed to create a 250cc sit-in scooter, which is the market's benchmark.

「JUST FIT! DYNAMIC ALMIGHTY COMMUTER」



The Forza Si is equipped with a powerful, exhilarating and easy-to-handle new 250cc engine that matches the characteristics of a sport scooter while fuel-efficient, and has a top-level run in the 250cc class at the start acceleration, and has the power performance of the margin even for two-seater. In addition, while having a large luggage box that can accommodate two full-face helmets, it is also equipped with a fuel tank of sufficient capacity to pursue convenience. By greatly changing the frame configuration from the past, the frame with increased rigidity but also suppleness has achieved weight reduction of the entire vehicle body. In addition, while slimming the front cowl, the wind protection effect is enhanced. It is an urban and sophisticated design while based on the form that anyone sees and understands at a glance. In addition, the front 14-inch rear 13-inch suspension and combinatorial brakes combine to create an honest handling characteristic that allows you to fully enjoy the fun of manipulating. In this way, Honda's advanced technology and unique design will be used to propose the next generation of sit-in scooters that can provide joy to many customers.

Honda Technical Research Institute Co., Ltd. Futa-wa R&D Center Forza Si Development Manager

HIDENORI NAGURA



- Styling design

Design development of the new Forza Si was carried out in accordance with the theme of technology development to evolve while inheriting the tradition. The aim was to take over the DNA of Forza, which has evolved as a symbol of Honda's advanced creation, and to express a new evolution in a way that was polished to "Forza-likeness". We are challenging our high goal of "creating the design of a global standard scooter.". Specifically, it is designed to match the lifestyle of the customer and satisfy the advanced model of the scooter. It is a design that satisfies the desire of "comfort", "convenience", "peace of mind", and "abundance" that many customers can share, and made the latest form and the optimal body size that embodies the product charm of Forza Si as a form.



In creating the "form" that determines the design, the first priority is to ensure space inside the body and to balance the body size that is tightened. Securing a luggage box with two full-face helmets and a 11L capacity fuel tank, and keeping a slim and compact body size, the new Forza Si has thoroughly eliminated wasted space. It is slim as a big scooter these days, and it is easy to maneuver and the handling at the time of parking is good body design among various mixed traffic in the city, and it is considered that it is possible to push forward easily. In addition, the seat shape maintains the rider's good footing, and also provides a comfortable presence for passengers. In the side view, the sharp character line flowing from the front to the rear, and the exquisite surface configuration that worked the edge on each section, to express a sense of mass and dynamism. In the front view, the front view was aimed at highlighting the eye-worthy of the new Forza Si with extensions that border the front mask headlights and the wipers that extended to the top. The new Forza Si expresses the sense of size, styling, and texture that satisfy many customers.



- Design of the suspension

As well as the pursuit of convenience as a commuter, as a production of fun to run, the spoke cast wheel of the advanced design reminiscent of the sports model in the motorcycle, and the large diameter disc brake tighten the suspension and fuse the sense of quality and the sports mind.



- Habitability (seat, side cover, tail cowl)

Forza Si's habitability is made up of the comfortable wind protection of the characteristics of the sit-in scooter, while the short screen is adopted to give you the exhilaration of driving in response to a pleasant driving wind. The seat shape ensures good footing by making the front end moderately narrowed down, and the seat height was set to 715mm, and it was considered to be able to maintain a calm position at the time of the stop. The sharp character line that flows from the bottom of the seat to the side cover and tail cowl he extends, change the expression more variously to the reflection of light, and made it with the assumption that it can be reflected in various situations from commuting, shopping, touring, and sporty driving. In addition, comfort is ensured by the inner body part which has a moderate hold property and the optimum step floor shape and area.

The rear grip creates a sharp flow that brings a sense of dynamism to the overall form, while the shape that considers the ease of grip of the passenger creates comfortable habitability and combines function and styling in response to the passenger's requirements.



- Colouring concept

We coordinated chic and modern colouring to maximize the texture of Forza Si and satisfy a wide range of customers.

- Asteroids black metal that shines fearless shine in the glossy black

ASTEROID BLACK METALLIC



- Growing red to give an aggressive and powerful impression

GLOWING RED



- Pearl Himalayas White with a smart and modern atmosphere

PEARL HIMALAYAS WHITE



- Headlight front winker

Forza Si's headlights have two 35/35W HS1 bulbs, and the efficient optical design of the multi-reflector provides light distribution that enables comfortable driving at night. In addition, the 21/5W bulb is adopted for the blinker, and the face of the new Forza Si is produced while ensuring visibility by lighting the position lamp (5W) at all times.

- Multi-reflector headlights



※写真はプロトタイプ

- Rear winker, tail lamp

Rear winker 21W of amber valve, two 5W bulbs in the tail lamp, the stop lamp employs two 16W bulbs, while ensuring sufficient visibility, reminiscent of a four-wheeled vehicle by surface emission of the tail lamp we have realized a design that brings out a profound and high-quality sense of luxury



※写真はプロトタイプ

- Meter

The meter is equipped with a large, high-visibility five-meter meter, which is high-quality and sporty and functional. In addition, we are pursuing a functional yet functional yet-to-be-functional image, such as liquid crystal display and indicators boasting a wealth of information. While providing accurate information to the rider, it is designed to tickle the sports mind, such as giving a suitable production to call the cockpit.



※メーターまわりの写真は機能説明のために任意に点灯したものです。

- Main switch, centralised switch

It is equipped with a main switch in the centre of the vehicle body with emphasis on operability. The main switch also uses a shutter key to deter theft. On the right side of the main switch, a switch is provided to operate the fuel lid and seat opening and closing, and it is designed to be easy to operate while riding posture.



- Frame

Chassis Forza Si, to demonstrate the convenience as a commuter of the sit-in big scooter, also combines the fun of manipulating is the original charm of the motorcycle, a wide range from beginners to veterans, we have realized the running that can be used in everyday life feel free. The frame combines suppleness and rigidity in a high dimension while satisfying the basic functions for running with the luxury feeling at the moment when it straddles, such as the optimum body size, dimensions, operability, and riding position that can sometimes enjoy touring sporty at times.

- Lightweight as a 250cc sit-in scooter model, that it is a frame to realize the manoeuvring characteristics with a sense of security and light and obedient handling
- It is a riding position and a sense of size that considers the comfort, ease of handling and foot wear ability to satisfy customers in the world
- Support the running that can cope with the expected road surface in the city, it can be handled with room even in two-seater having suspension and power performance
- Utility space is high storage and easy to handle opening and closing structure
- In consideration of the user's usability, it is possible to correspond in room to customize the electrical equipment

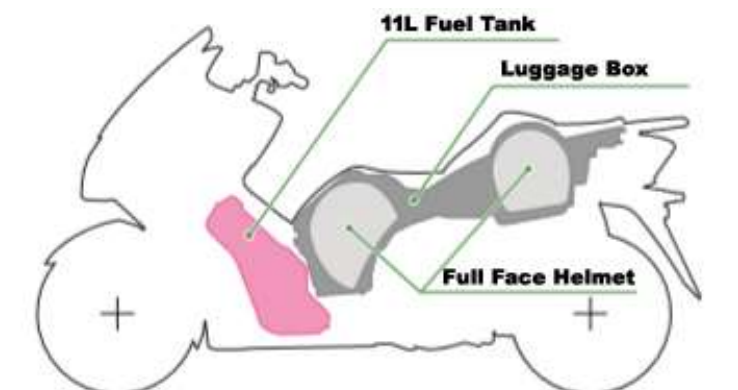
Our goal of development was to meet all of these.

- Frame

Frame is powerful in the low and medium rotation range, while supporting the lightweight compact engine that turns spookily to the high rotation range, by gentle and straightforward handling to maintain high rigidity, we have realized a high trace performance. As a global model, we developed the best balance of size, storage, footwear, weight, running and price. The vehicle body of 192kg with ABS 194kg in vehicle weight has a fuel tank of 11L capacity, but has a luggage box that full face helmet can load two, yet in order to meet the needs of many customers, the seat height is reduced to 715mm, the total length 2165mm width 755mm slim and can realize packaging that does not impair the comfort of two passengers, It is with a good frame of balance.

- Frame CG

Body layout image diagram

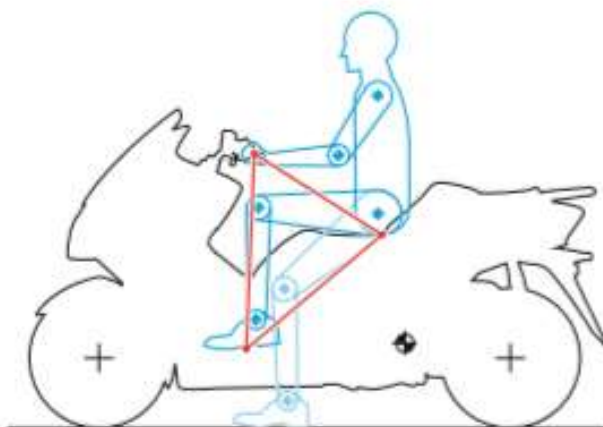


*Please do not include any things that are susceptible to heat, fragile, or valuables in the luggage box. In addition, the helmet may not enter depending on the shape and size.

- Riding position

The riding position assumes the physique of various customers, and it is made that more people from the small one to the big one can enjoy it enough. This has enabled us to create a natural riding position that is more stress-free and manageable, from congested streets to suburban touring on the highway, and sometimes driving on winding roads. The seat shaded with a sense of security by slimming down the floor shape in conjunction with the optimization of shape and hardness. This has created a functional riding position that allows riders and passengers to enjoy comfortably and lightly when travelling for business or for long periods of time, without interfering with the smooth movement of riders and passengers.

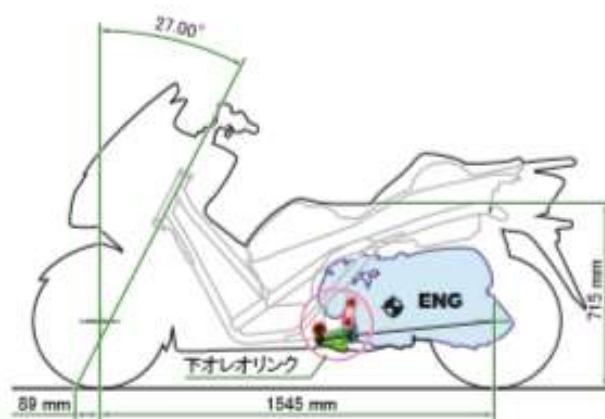
- Riding Position



- Body dimension and parts arrangement

Forza Si aimed at light and straightforward handling as a sit-in big scooter. For this reason, the sh300 (i European model) is based on a compact engine that has a wheelbase of 1545mm, a caster angle of 27°00', and a seat height of 715mm, and by optimizing the weight distribution before and after, it achieves lightness and high turning performance. In addition, the engine mount is difficult to convey vibration through the lower Oreo link, making for more manageable and straightforward handling.

- Body dimensions & part placement diagrams



- Front inner pocket, box

On the right side, the pocket sits easy to access by the user. On the left side, the switch next to the main key is equipped with a box with a lock that can be opened and closed to ensure the capacity to be stored, such as navigation system, etc. In addition, it is equipped with an accessory socket and corresponds to the user's preference. In addition, this left box can be opened and closed only when the position of the key is on or open.



- Front maintenance panel

It is now possible to perform the maintenance of the winker bulb easily.

- Rear Spoiler Cover

By removing a part of the rear spoiler cover, we set the seat surface to be able to attach optional products such as top boxes without requiring additional machining of mounting holes on the cover.



- ETC antenna Built-in

It is a meter visor with a structure that can be built in stylishly with etc antenna.

- Luggage box under seat

A luggage box with two full-face helmets under the seat is secured. In addition to the helmet, u-shaped lock, rain gear, etc. can be stored.



*Please do not include any things that are susceptible to heat, fragile, or valuables in the luggage box. In addition, the helmet may not enter depending on the shape and size

- Front suspension

The front suspension is a straight-standing telescopic type with an inner tube diameter of $\phi 35\text{mm}$ that optimizes the rigidity balance between the frame and the frame. The suspension stroke 110mm is secured, and the ride comfort with the soft, waistin in the city area, and the feeling of riding and the ground feeling at the time of the touring running are achieved in a high dimension.

- Rear suspension

The rear suspension ensures an axle stroke of 98mm, and by adopting a lower oreolink to the engine mount, it reduces the engine vibration transmitted to the rider, as well as reduces the push-up from the road projections, and provides a comfortable ride even when loading luggage or tandem driving.

- Front and rear wheels, tires

The lightweight aluminium cast wheel has a spoke shape that achieves uniform rigidity distribution with a simple Y-shaped spoke, contributing to light operability. The tyre size is 120/70-14 at the front and 140/70-13 on the rear to accommodate road characteristics such as rough paved roads.

- Front Rear Brake

Standard specifications equipped with combined ABS that combines abs with combi brakes as standard. The disc brake of $\phi 240\text{mm}$ after the front $\phi 256\text{mm}$ contributes to the production of the run by a high-quality brake filling.



- Engine

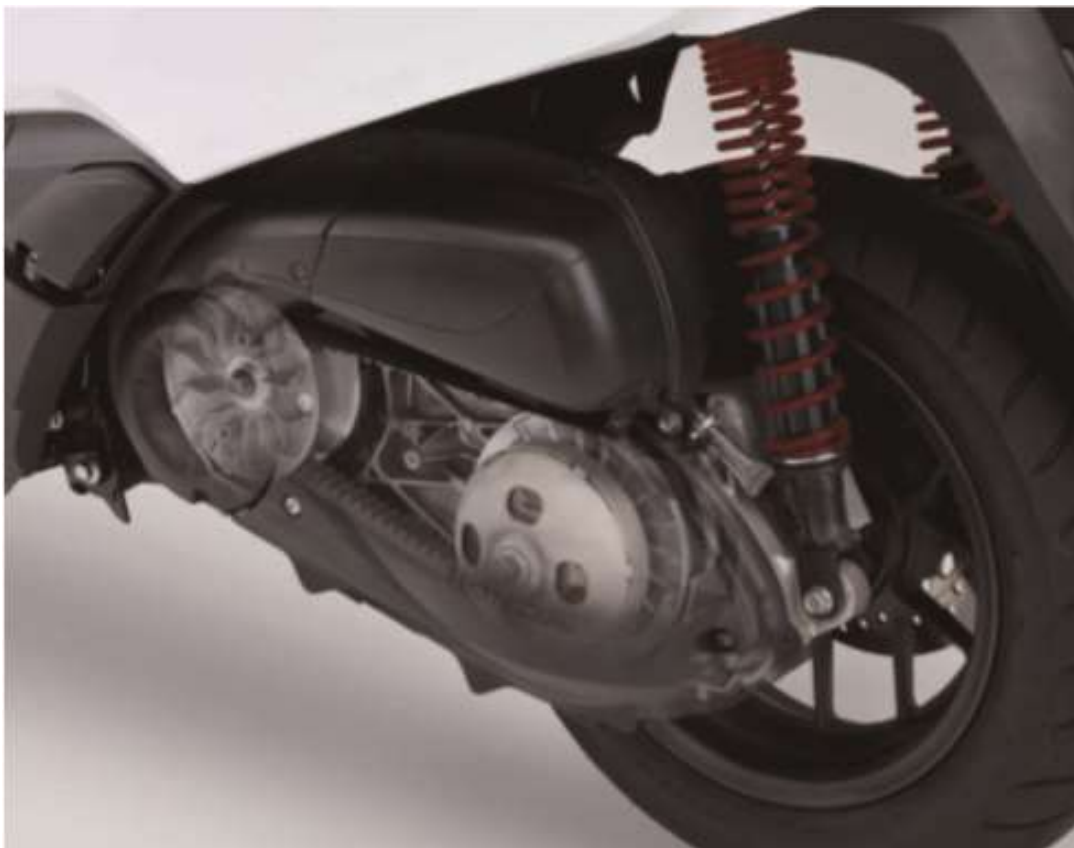
Forza Si's engine, as a big scooter engine for the next generation, has been developed in accordance with the output characteristics required by Forza Si based on sh300i engines, which have already been well received by many European customers.

The requirement is

- Based on the SH300i engine, this to have a potential that can correspond to a wide range of usability
- While slim in light weight, it is an engine that is mounted in combination with a V-belt type unshifting mechanism (V-matic) of wide ratio of low fuel consumption and easy to handle that satisfy many customers

The advantages of economic and ease of handling have been achieved in the city with ease, and the engine characteristics that satisfy the touring scene. It is finished in a lightweight and compact water-cooled four-stroke single-cylinder engine that smoothly turns to the low and medium rotation range as well as the high rotation range aiming at the optimum output characteristics as the engine of the sit-in scooter that can be offered to a lot of customers.

- V-belt type non-step-shifting mechanism



The photograph is CG synthesis.

- Environmental performance

Environmental performance was developed based on the current SH300i engine, which fully clears European regulations in order to fully meet the basic performance of a big scooter while setting higher targets. With the financial load on our customers in mind, we have realized an engine for Forza Si that focuses on fuel efficiency and mileage.

By optimizing intake and exhaust and low friction technology, optimization of ACG power generation output, and adopting the lower oreo method, which has a proven track record in SH300i for the engine suspension system, reduces vibration transmitted to the vehicle body, eliminates the need for balancers, and achieves smooth blowing. The weight reduction of the vehicle body total and the setting of V matic are combined to achieve 41.0km/L (60km/h station test value)

For sh300i, the technology for improving combustion efficiency is to achieve the target fuel consumption by incorporating technologies such as the combustion chamber shape and cam profile, valve timing, and the use of long-reach projection type spark plugs to ignite in the centre of the combustion chamber. In addition, in order to reduce friction of the piston reciprocating part, an offset cylinder was adopted (5mm offset on the EX side) and a low-rocker arm was used for the cylinder head. The piston optimizes the striatum shape to further promote the moisture of the engine oil. In addition, it is low friction, has excellent quietness, and adopts an integral crank metal bearing and a sealed crankcase for a more compact engine.

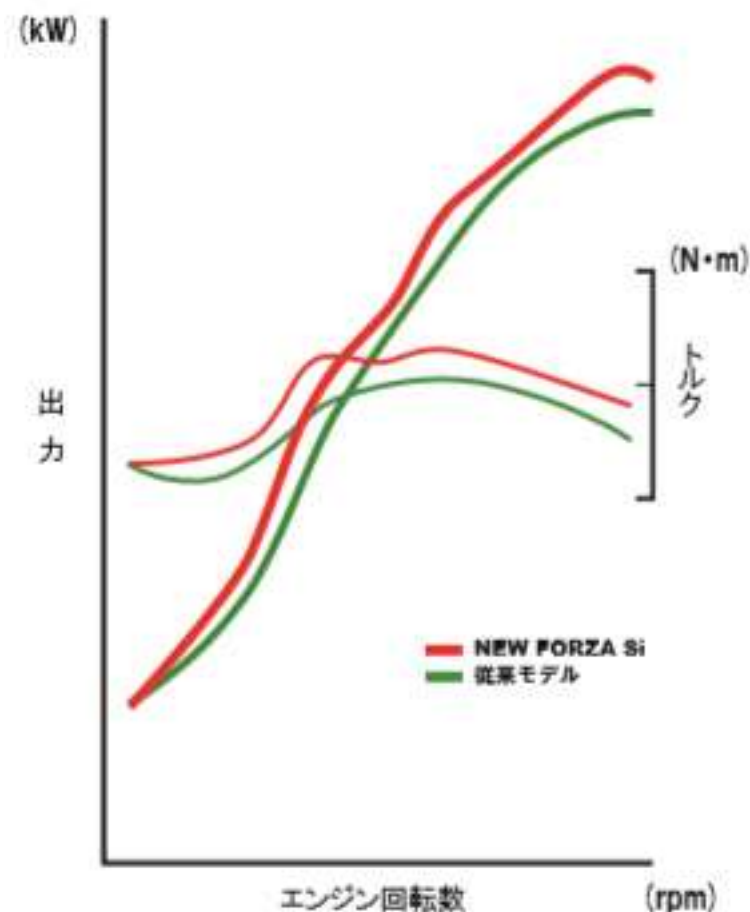


● Engine characteristics

The engine is based on the SH300i and has changed the bore to achieve smooth and powerful characteristics. Cooling performance ensures sufficient performance by high-efficiency cooling water flow analysis by CAE simulation corresponding to high output.

By changing the displacement to 250cc and optimizing the intake and exhaust specifications for the sh300i engine that was the base, we were able to improve the output characteristics of the low and medium-speed ranges. Improved V-matic transmission efficiency and improved power performance without sacrificing fuel efficiency by efficiently extracting maximum torque

Output characteristic image diagram



Forza Si [] AB

Car name and model	Honda JBK-MF1
Total length x full width x total height (mm)	2,165×755×1,185
Wheelbase (mm)	1,545
Minimum ground height (mm)	135
Seat height (mm)	715
Vehicle weight (kg)	192[194}
Number of passengers	2
Fuel consumption rate (km/L)	41.0 (60km/h stationary test value)
Minimum rotation radius (m)	2.4
Engine type	MF12E
Type of engine	Water-cooled 4-stroke OHC4 valve single cylinder
Total displacement (cm ³)	248
I.D. x Stroke (mm)	68.0x68.5
Compression ratio	10.2
Maximum output (kW[PS]/rpm)	17[23]/7,500
Maximum torque (N/m[kgf·m]/rpm)	23[2.3]/6000
Fuel supply device type	Electronic ally, electronically controlled fuel injection system (PGM-FI)
Starting method	Self-expression
Ignition device format	Full transistor battery ignition
Fuel tank capacity (L)	11
Transmission format	Stepless speed type (V matic)
Tire	Front 120/70-14 M/ C 55P
	Rear 140/70-13 M/ C 61P
Brake form before and after	Front Hydraulic disc
	Rear Hydraulic disc
Suspension method	Front Telescopic formula
	Rear Unit swing type
Frame format	Backbone

■Model certification application figures under the Road Transport Vehicle Act

■Manufacturer: Thai Honda Manufacturing Co., Ltd.

■Country of origin/ Thailand ■Importer/Honda Motor Co., Ltd.

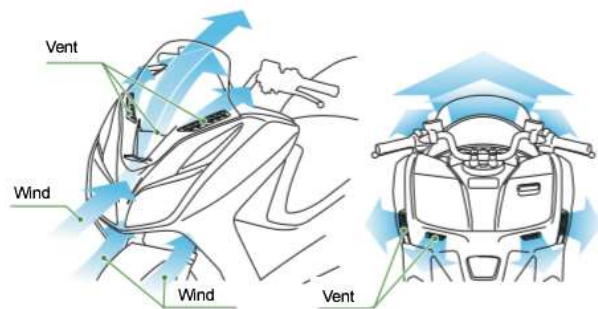
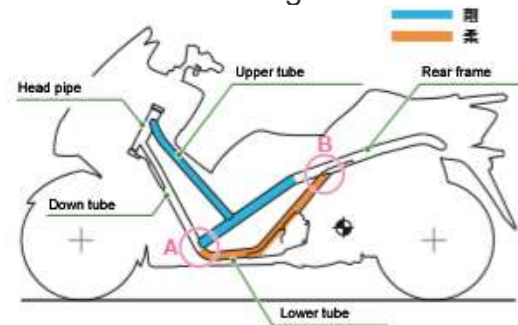
*The fuel consumption rate is the value under the prescribed test conditions. It depends on the customer's environment (weather, traffic jams, etc.), driving method, vehicle condition (equipment, specifications), maintenance, etc. *This specification is subject to change without notice.

- New concept frame that achieved supple running by the harmony of "tsuyoshi" and "soft" until now, the frame of the medium and large scooter, from the periphery of the head pipe to the pivot periphery, using gusset plates, etc., the idea that to ensure rigidity overall was the mainstream

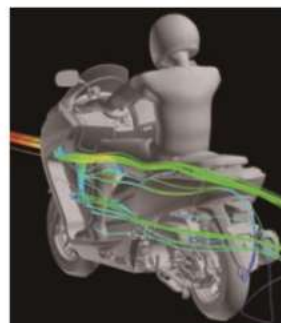
The frame of the new FORZA Si is composed of the "rigid" portion of the simple structure that combines the upper tube extended linearly from the head pipe to the rear frame extended straight forward diagonally, and the "soft" part that has a "shin" with a "shin" section that spreads the distance between the rear frame of the down tube and the front and rear joints (between the right figure A-B) and this "rigid" "Soft" is optimally harmonized by CAE analysis. This new frame combines a light and supple ride and high driving stability in the high-speed range.

- In addition to air ballooning from the windscreen tip, wind protection technology to provide a comfortable riding environment for a slim body, we have placed three places in the V-shape on the meter visor and four vents near the feet of the inner cowl. While the exhilarating air introduced from the windscreen tip was flowed to the rider, these seven vents optimally adjusted the air flow around the rider to expand the wind protection area. While making the front cowl slim, wind protection around the rider's knees and a wide range up to the left and right handles has resulted in a comfortable riding environment.

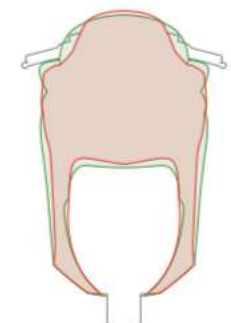
Frame structure diagram



CAE resolution



Front cowl comparison image

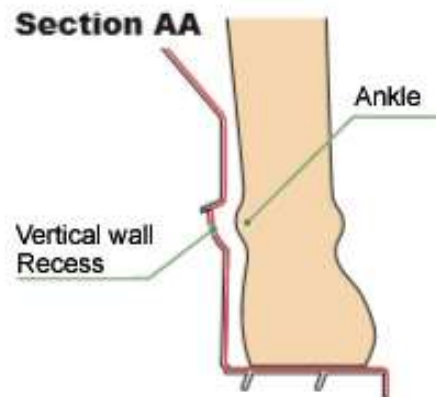
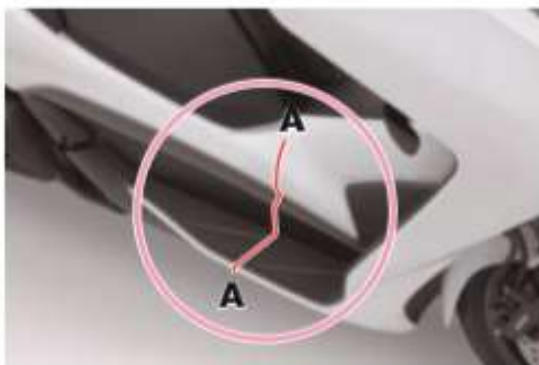


New FORZA Si
Conventional models

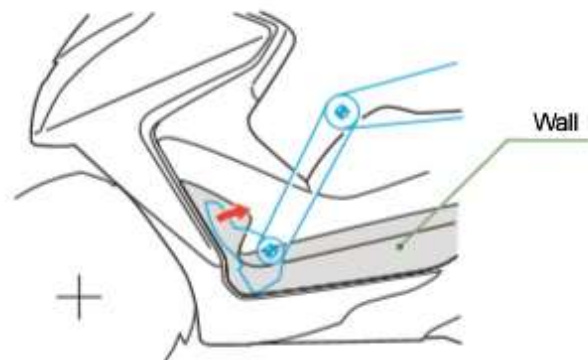
- Foot space to create a comfortable riding environment



(1) At the boundary with the middle cover above the vertical wall of the step floor, a recess extending in the longitudinal direction is provided, and when the foot is placed on the floor, it is a shape that becomes familiar with the ankle circumference. In addition, it has become a sharp character line flowing from the front to the rear

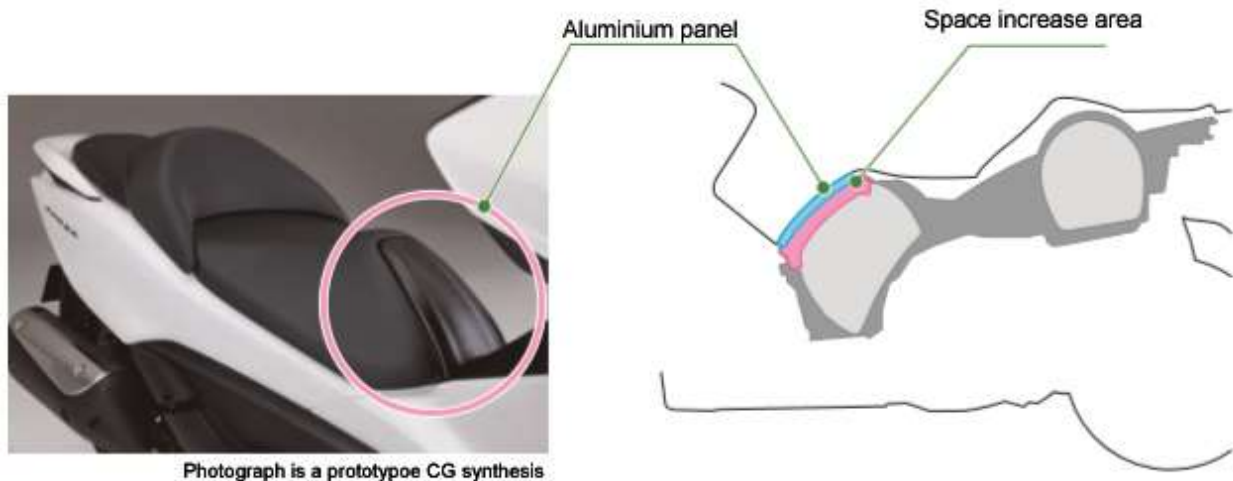


(2) The front end of the vertical wall of the step floor was triangulated and projected to the upper side. When the foot is extended loosely to the inclined part in front of the step floor, the vertical wall of one of the smooth surfaces becomes the shape which becomes familiar with the movement of the foot of the arrow in the figure. In addition, it becomes a point to work the edge in the front design



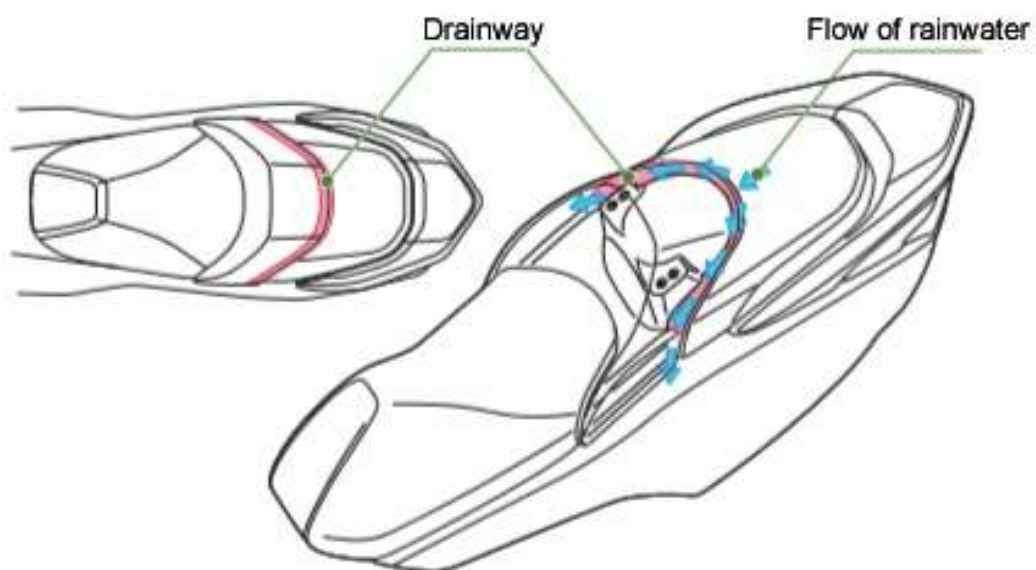
- Seat structure that combines high texture and large capacity and easy-to-use storage space

We installed a separate body panel made of aluminium on the front part of the sheet. By changing the front side of the luggage space from cushion material to aluminium panel, we were able to achieve a high texture and a narrowing shape to ensure good footwear, and to further secure the front side of the helmet storage space.



- Comfortable seat structure where rainwater on the rear seat surface does not flow into the front seat

In the gap between the rear edge of the backrest and the seat body, we have provided a part that becomes drainage to drain the rainwater of the rear seat to the left and right sides of the vehicle body. The rainwater in the rear seat is quickly discharged under the backrest, preventing it from flowing into the seat surface of the front seat. The comfort of the large seat has been improved further.



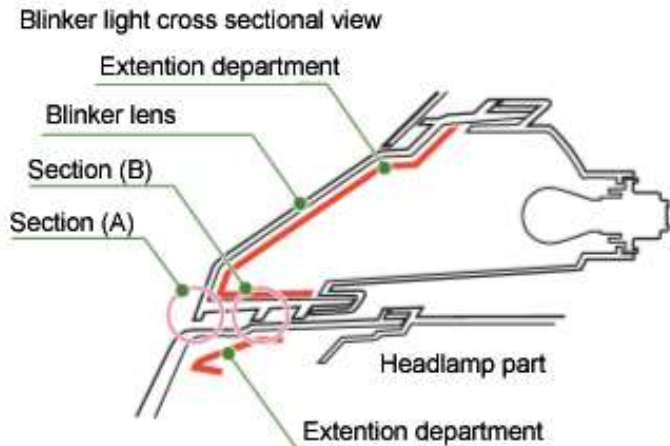
FORZA Si has filed 22 body-related, 2-electric-related, and 24 patents, including the above.

- Blinker lens structure that forms a beautiful sequence from headlights to wipers

The blinker lens has a headlight and close protrusion on the inside and outside, making the distance between the inner protrusion and the headlight (B) smaller than the outer projection (A). This makes the headlight-edged extension part beautifully continuous with the winker extending to the top, highlighting the identity of the front design of the new FORZA Si.

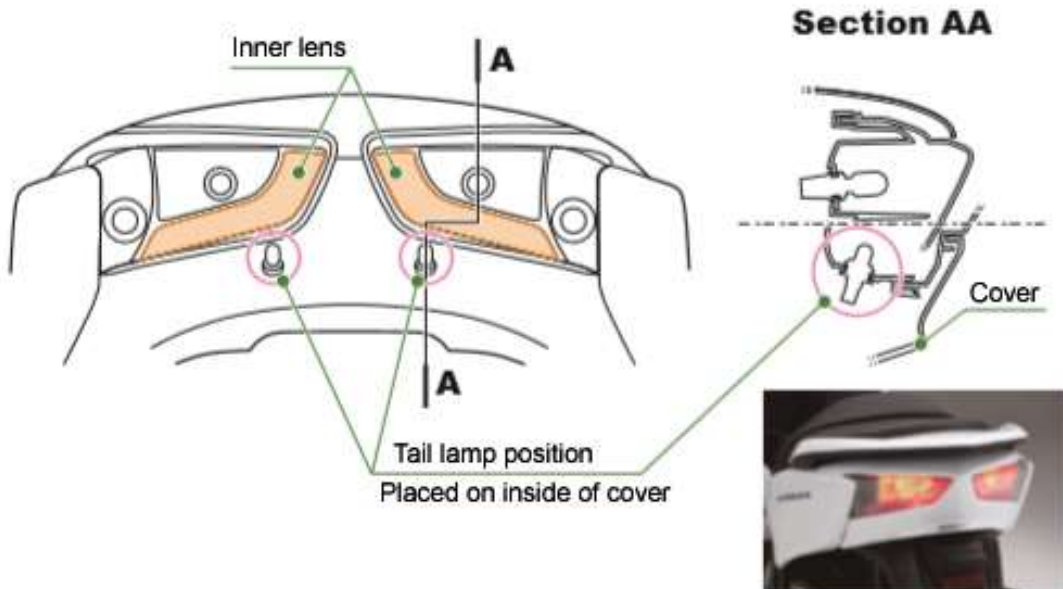


Photograph of prototype



- Surface light-emitting tail lamp that brings out the sense of quality, the bulb is invisible

The lamp bulb, which is the light source of the tail lamp, was placed inside the body cover between the left and right tail lamps, and the entire inner lens was made to emit light through the reflector. While keeping the lens small, it ensures sufficient visibility. In addition, the invisible surface emission of the bulb brings out a profound sense of luxury.



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