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Introduction

The QuadSport Z400 was first introduced in 2002 as a high-performance sport ATV featuring powerful running capability delivered with its liquid-cooled DOHC engine – the first in its class – and other advanced designs, along with cutting-edge styling.

As soon as it appeared on the market, the QuadSport Z400's high performance quickly won wide popularity; the model presented to many customers around the world the enjoyment of sport ATV riding, from fun sport rides to competition use.

The QuadSport Z400 powerfully proved itself as a sport model in ATV motocross. In 2004, the QuadSport Z400 became, at the hands of Team Suzuki/Yoshimura rider Doug Gust, the first 4-stroke ATV to win the ATVA Pro class championship.

With the introduction of the race-ready QuadRacer R450, the QuadSport Z400 was no longer the top choice as a base machine for competition ATVs; still, the model continued to win strong support from customers as a user-friendly, high-performance all-round sport ATV.

Now, six years after its debut, the QuadSport Z400 in 2008 unveils a new form and function designed to bring about exciting evolution in sports ATVs.

While keeping intact its basic concept of offering sport ATV riding enjoyment to a wide range of customers, the latest QuadSport Z400 features various QuadRacer 450-derived upgrades - fuel injection, ECM settings for more traction and aggressive styling – for higher performance and more user convenience.



2003 QuadSport Z400



2008 QuadRacer R450

Product concept : "Engineered for fun."

The 2009 QuadSport Z400 is developed inheriting the basic concept of the original 2003 model, to "offer sport ATV riding enjoyment to a wide range of experienced customers."

At the same time, the 2009 model is also developed with the goal of making sport ATV riding more appealing to an even wider range of customers, with emphasis on these four aspects:

■ High performance, now even more accessible

Powerplant with increased low-to-mid range output; chassis with heightened stability feel.

■ Fuel injection

Enhanced throttle response. Improved starting. Maintaining consistent running feel against changes in temperature and atmospheric pressure.

■ QuadRacer R450-inspired styling

Aggressive, cutting-edge QuadRacer R450-inspired new styling.

■ Functional, user-friendly equipment

Changes for better user convenience, including wide footrests, front brake lever with adjustment mechanism, and changed riding position.





Fuel injection

2009 QuadSport Z400 Engineered for fun

QuadRacer R450-inspired styling

Functional, user-friendly equipment

■ Basic spec/features comparison

	2009 QuadSport Z400	2008 QuadSport Z400
Engine cooling	Liquid-cooled	Liquid-cooled
Valvetrain	DOHC, 4 valves	DOHC, 4 valves
Fuel delivery	Fuel injection, 36mm	BSR37
Reverse gear	Yes	Yes
Front shock adjustment	Spring preload Compression damping Gas:separately pressurized tank	Spring preload Rebound/compression damping Gas:separately pressurized tank
Wide footpegs	Yes (46mm)	No (31mm)
Adjustable brake lever	Yes	No
QuadRacer R450-inspired styling	Yes	No
Headlight 12V 40/40W Detachable, single		12V 30/30W Dual



2009 QuadSport Z400

2008 QuadSport Z400



Engine design

High performance, now even more accessible

The QuadSport Z400 engine is developed to deliver high performance together with smooth power-output characteristics and smooth throttle-response feel that make the powerplant more user-friendly to a wide range of experienced customers.

For this objective, the engine, based on the 2008 QuadSport Z400 powerplant, newly incorporates fuel injection, and the structure and the design specs of the intake system have been reviewed.

Especially, fuel injection (with a 12-hole injector) employed as a crucial element in making sure the powerplant offers "high performance, now even more accessible."

Main changes:

■ Fuel injection employed

Fuel injection employed to improve user-friendly performance over various surface conditions and operating environment.

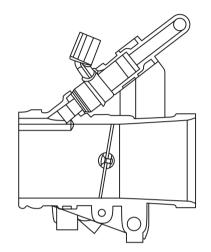
Main features -

- Shaper and smoother throttle response
 Enhanced user-friendly performance in the low-to-mid range.
 Stronger power-output feel when sport-riding.
- Helps keep power-output feel consistent under changing temperature and atmospheric pressure.
- Improved starting under various environment.
- Improved fuel efficiency (fuel consumption reduced by approx. 5%).

The latest QuadSport Z400 also incorporates the know-how for increasing traction through changes in ECU programming - gained through development of the 2008 QuadRacer R450 - resulting in heightened power-output feel (traction) in the low-to-mid range.

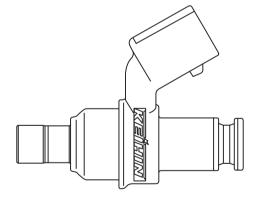
Specifically, the system is programmed to obtain more traction, by having the ECU select the optimum fuel-injection volume, injection timing and ignition timing based on throttle position, engine rpm, etc and the rate of change of such data.



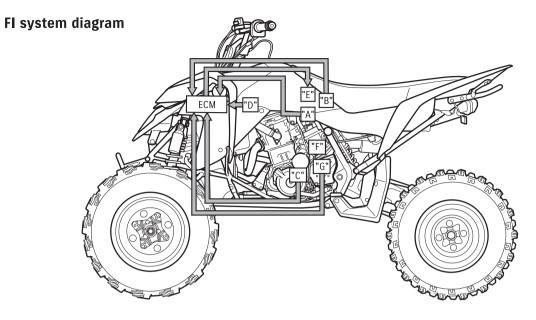


Throttle body





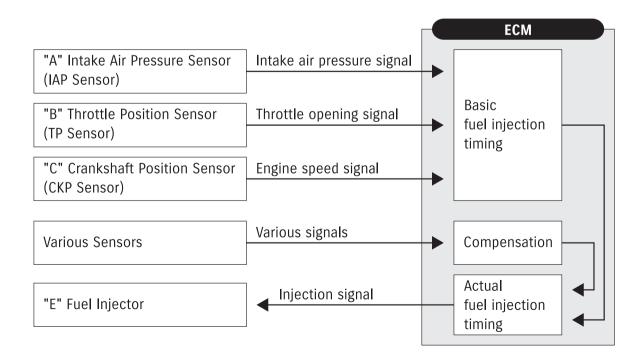
Injector (12 hole)



"A": Intake air pressure sensor (IAPS)	"B": Throttle position sensor (TPS)	"C": Crankshaft position sensor (CKPS)	"D": Tip-over sensor (TOS)
"E": Fuel injector	"F": Fuel pump (FP)	"G": Gear position switch	

The factors to determine the injection time include the basic fuel injection time, which is calculated on the basis of intake air pressure, engine speed and throttle opening angle, and various compensations.

These compensations are determined according to the signals from various sensors that detect the engine and driving conditions.

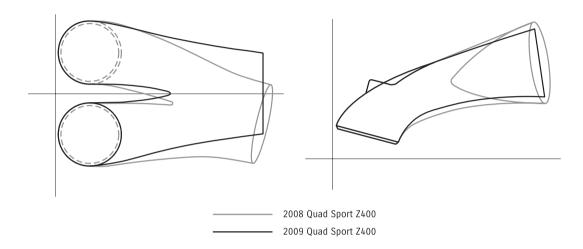


■ Cam changed

The cam profile and cam timing have been changed to a more low-to-mid-range type, to increase low-to-mid-range power output.

■ Intake port changed

The shape of the intake port is changed (diameter reduced and straighter-shaped) to increase low-to-mid-range output without sacrificing high-range output too much.



■ Muffler internal structure changed

Muffler internal structure is changed, contributing to increased low-to-mid-range output.

■ Exhaust pipe length changed

The muffler is shortened to maintain balance with the overall setting which is designed with emphasis on the low-to-mid range, and thus retain ample high-range power output.

Electricals

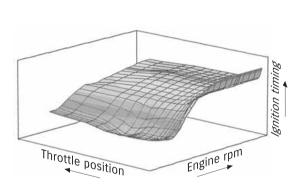
ECU

With the switch to fuel injection, the ignitor is replaced by the ECU.

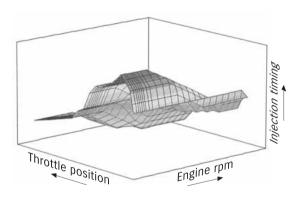
	2009 QuadSport Z400	2008 QuadSport Z400
CPU	16 bit	-
ROM	96 kilobyte	-

- Four ignition maps.
- Two injection timing maps.
- As for injection volume, combination of two injection boost-Ne (engine rpm) maps and two injection throttle-Ne (engine rpm) maps (total of four maps).
- The system includes self-diagnosis function.

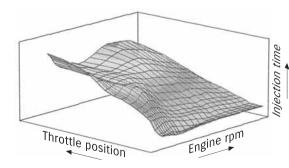
Ignition map



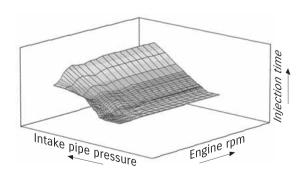
Injection timing map



Injection throttle-Ne map



Injection boost-Ne map



Chassis design

Chassis redesigned concept

Chassis redesign objectives centered on incorporating QuadRacer R450 styling features, helping make high performance more accessible, and utilizing functional, user-friendly equipment.

■ QuadRacer R450-inspired styling

External looks restyled to reflect the increased engine and chassis performance. The styling inherits the aggressive, edgy design impression of the top-end sport model QuadRacer R450.



2009 QuadSport Z400



The QuadSport Z400 inherits the styling features of the QuadRacer R450 – an aggressive front end and edgy shaped front and rear fenders. Styling features, designed inspired from and incorporating feedbacks from the QuadRacer R450's cutting-edge sporty design, includes the T-shaped seat facilitating the rider's front/rear and sideways weight transfers, a slim chassis design allowing much freedom of riding action, radiator shrouds shaped for superb cooling function, and a headlight sharing the same specifications as that of the QuadRacer R450 and easily detachable for convenience.

2009 QuadSport Z400





2006 QuadRacer R450





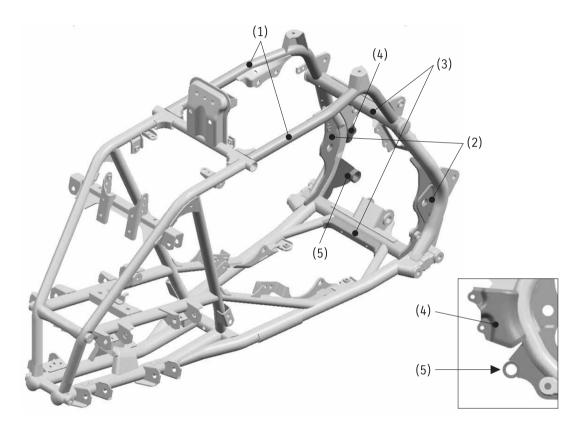
High performance, now even more accessible

Chassis developed pursuing accessible high performance for enjoyment by a wide range of experienced customers. The chassis delivers a high-standard combination of prompt, direct response to the rider's inputs and smooth riding comfort.

■ Frame redesigned

Frame rigidity balance changed to heighten handling stability feel.

Mainly, rigidity at the chassis center section is increased, to help reduce chassis twisting and thus change roll feel and terrain-traversing performance.

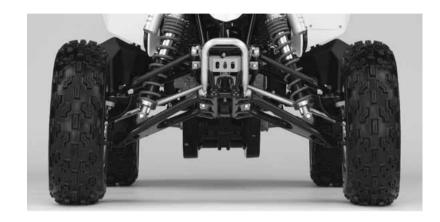


- (1) Tank rail tube wall thickness is increased by 0.4mm to heighten frame torsional rigidity.
- (2) Pivot section bracket shape is reviewed to heighten rigidity.
- (3) Rear shock mounting section tube (above) and link lever mounting section reinforcement (bottom) both have increased wall thickness to heighten rigidity (increased smoothness of rear-suspension operation and improved riding comfort).
- (4) Rear brake master cylinder mounting position is moved from seat rail to frame downtube, to make seat-rail removal easier (easier maintenance).
- (5) Rear brake pedal shaft diameter is increased to heighten pedal rigidity and thus improve brake feel.

Front track widened

Front track is widened from 935mm to 960mm, by changes to the front suspension upper and lower arms.

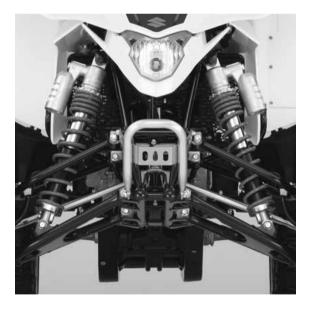
The combination of the above three changes – widened front track, heightened frame torsional rigidity and heightened axle shaft rigidity – contribute to reduced roll feel, resulting in heightened handling stability feel.



■ Front suspension

Front suspension setting featuring more smoothness and softness at the beginning of wheelstroke becoming gradually firmer and tauter as the wheelstroke progresses, realized by changes on various suspension sections and suspension setting.

As a result, the suspension offers a combination of smooth stroke feel and a certain amount of firmness/tautness, in other words a suspension feel offering superb riding comfort together with a proper firm feel.



■ Rear suspension

Various changes to the shock absorber and new rear suspension settings changed to deliver, as with the front suspension, a combination of smooth stroke feel and a certain amount of firmness/tautness.

On the latest model, the suspension changes, together with the increased chassis rigidity, result in a more neutral response to the rider's intentions.



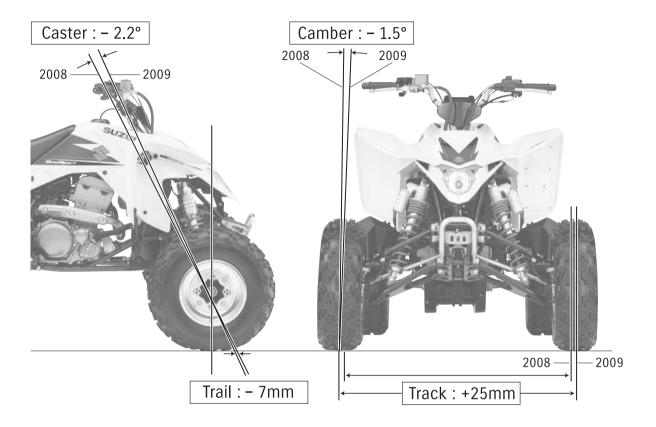
■ Front brakes

Front brake pad material changed for a 10 percent increase in the coefficient of friction, in order to increase braking force and for a softer transitional characteristics before locking. The change results in a changed brake controllability feel.

Note: The rear caliper body is shared with the QuadRacer R450, but brake pad material, etc are different.

■ Front upper and lower arms

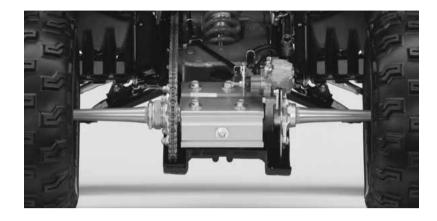
The overall lengths of the front upper and lower arms as well as the alignment is changed, resulting in increased lightness of steering feel.



	2008 QuadSport Z400	2009 QuadSport Z400
Track	935 mm (36.8 in)	960 mm (37.8 in)
Caster	8.5°	6.3°
Trail	36 mm (1.42 in)	29 mm (1.14 in)
Camber	- 0.9°	-2.4°

■ Rear axle

Rear axle shaft taper shape is changed to heighten rigidity balance.



Rear tires

Rear tire pressure is changed from 27.5 kPa to 30 kPa, to increase tire traction.



■ Seat rail shape changed

Seat rails changed from round tubes to rectangular tubes as with the QuadRacer R450, for increased rigidity (compared at the tubes' cross section, bending rigidity is increased approx. 30% vertically and 12% horizontally [left and right])



■ Front grip shape

The front grip now has the same shape as the QuadRacer R450, to reduce weight.



■ Piggyback-reservoir shock absorbers front and rear (carried over from current model)
The latest model carries over from the current model the piggyback-reservoir shock absorbers which contribute to handling stability.

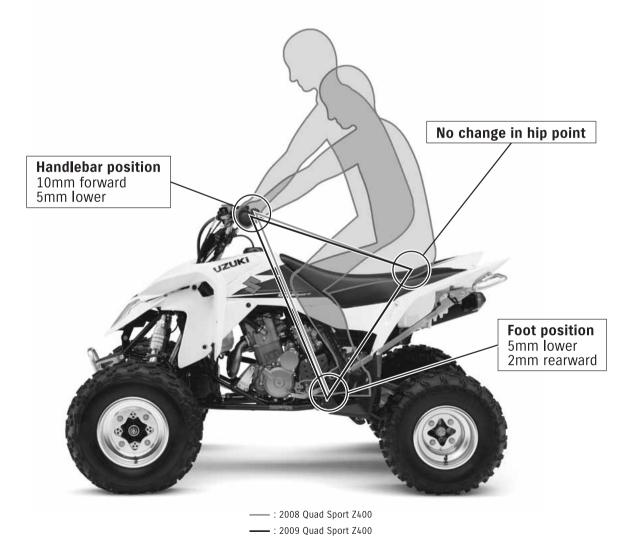
Functional, user-friendly equipment

Chassis sections changed and new equipment employed, with emphasis on user-friendliness when riding and when performing maintenance.

■ Riding position changed

Riding position is changed, to increase the freedom of rider assuming different postures. Handlebar shape and position (moved 5mm lower and 10mm forward) and footrest width and position (5mm lower and 2mm rearward) were reviewed and changed to make it more comfortable for the rider to move during sport riding.

In addition, the front mud guards are moved 45mm forward for more clearance from the rider's knees, to increase freedom of rider's weight transfer movements.



■ Front brake lever

Front brake lever position adjustment mechanism (like that on the QuadRacer R450) is employed, making the brake system more user-friendly.



■ Footrests

The footrests now have a wider stepping surface (widened from 32mm to 46mm, the same width as QuadRacer R450) to help reduce the impact to rider's feet when landing. Widening the footrests also helps allow rider weight transfers to be executed more comfortably, expanding the rider's freedom of action.



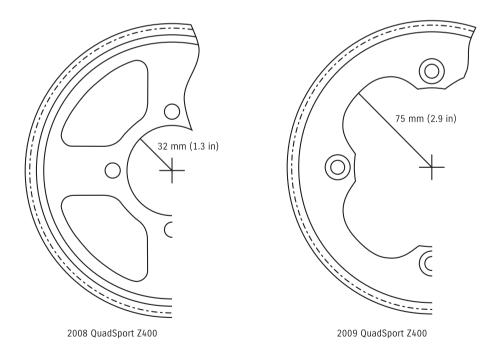
■ Rear brake master cylinder mounting position changed

Rear brake master cylinder mounting position is moved from the seat rail to the frame downtube section, to make seat-rail removal easier, thus facilitating maintenance.



■ Rear sprocket

Same mounting method as the QuadRacer R450, for easier maintenance.



■ T-shaped seat (retained from current model)

T-shaped seat, which help facilitate rider weight transfers during sport riding, is retained from the current model, but with shape changed to match the QuadRacer R450-inspired overall styling.



Specifications

DIMENSIONS AND CURB MASS		
Overall length		1830 mm (72.0 in)
Overall width		1190 mm (46.9 in)
Overall height		1145 mm (45.1 in)
Wheelbase		1245 mm (49.0 in)
Front track		960 mm (37.8 in)
Rear track		910 mm (35.8 in)
Ground clearance		265 mm (10.4 in)
Seat height		810 mm (31.9 in)
Curb mass		193 kg (425 lbs)
ENGINE		
Туре		4-stroke, liquid-cooled, DOHC
Number of cylinders		1
Bore		90.0 mm (3.543 in)
Stroke		62.6 mm (2.465 in)
Displacement		398 cm³ (24.3 cu. in)
Compression ratio		11.3 : 1
Fuel system		Fuel injection
Air cleaner		Polyurethane foam element
Starter system		Electric
Lubrication system		Dry sump
Idle speed		1600±100 r/min.
DRIVE TRAIN		
Clutch		Wet multi-plate type
Transmission		5-forward and 1-reverse
Gearshift pattern	Forward	1-down 4-up, foot operated
dearshire pattern	Reverse	Foot/hand operated
Primary reduction ra	tio	2.960 (74/25)
	Low	2.538 (33/13)
	2nd	1.666 (30/18)
Gear ratios	3rd	1.238 (26/21)
	Тор	0.846 (22/26)
	Reverse	2.153 (28/13)
Final reduction ratio		2.857 (40/14)
Drive chain		RK 520SMOZ10S, 96 links

CHASSIS			
Front suspension		Independent, double wishbone, coil spring, oil damped, spring preload fully adjustable, compression damping force fully adjustable	
Rear suspension		Swingarm type, coil spring, oil damped, spring preload fully adjustable, rebound and compression damping force fully adjustable	
Front wheel travel		215 mm (8.5 in)	
Rear wheel travel		230 mm (9.1 in)	
Caster		6.3°	
Trail		29 mm (1.14 in)	
Toe-out (with 75kg)		6 mm (0.24 in)	
Camber		-2.4°	
Steering angle		41° (right & left)	
Turning radius		3.3 m (10.8 ft)	
Front brake		Disc brake, twin	
Rear brake		Disc brake	
Front tire size		AT22×7 R10 ^{**} , tubeless	
Rear tire size		AT20×10 R 9 [☆] , tubeless	
ELECTRICAL			
Ignition type		Electronic ignition (CDI)	
Ignition timing		5° B.T.D.C. at 1600 rpm	
Spark plug		NGK CR7E or DENSO U22ESR-N	
Battery		12V 28.8 kC (8 Ah)/10 HR	
Generator		Three-phase A.C. generator	
Main fuse		20A	
Fan fuse		10A	
Headlight		12V 40/40W	
Brake light/Taillight		12V 21/5W	
Neutral indicator ligh	t	12V 1.7W	
Reverse indicator light		12V 1.7W	
FI/Coolant temperature indicator light		12V 1.7W	
Low fuel indicator light		12V 3.4W	
CAPACITIES			
Fuel tank, including r	eserve	9.5 L (2.5/2.1 US/Imp gal)	
	Oil change	2000 ml (2.1/1.8 US/Imp qt)	
Engine oil	With filter change	2100 ml (2.2/1.8 US/Imp qt)	
	Overhaul	2200 ml (2.3/1.9 US/Imp qt)	
Coolant		1.2 L (1.3/1.1 US/Imp qt)	