

 **SUZUKI**

RM

2003 Series

250

125

85/85L

65



Mickael Pichon

WMX 250cc World Champion 2001 & 2002

RM 250



Team

A Stronger Powerband For Better Lap Times

The key to a better lap time around a motocross track is making the motorcycle do exactly what the rider wants, when the rider wants, in the way the rider wants. A big part of that is tractability and traction, which comes from superior throttle response and abundant low and mid-range torque. Which is why Suzuki engineers worked hard to improve the RM250's already-good tractability for 2003, broadening the powerband and smoothing the power curve. The catch is that improving the power delivery is not so simple as making one single change; a modification to the cylinder porting may affect the carburettor jetting; a change in exhaust pipe dimensions may not produce the desired results until the exhaust valve system is changed, and so on and so on. It sounds so easy when it's just words on paper, but the reality is that refining engine characteristics is an exhaustive process of trying combination after combination on the dyno and on the test course, followed by real-world testing in motocross races around the world.



Exhaust port and Exhaust sub-ports

For the 2003 RM250, the combination that resulted in the broadest, strongest power curve started with

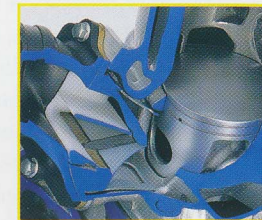
new cylinder porting developed in the Motocross World Championship Series, AMA Motocross Series and All-Japan Motocross Series. The reshaped exhaust port is longer and narrower, with more downslope (25 degrees vs. 20 degrees), and the reshaped exhaust sub-ports are larger and more rectangular.

The scavenging ports have been raised 1.0 mm and the boost scavenging port is now separated from the reshaped intake port. The reed valve intake passage is actually slightly smaller, 70mm wide instead of 82mm wide, better matching the size of the reed valves and increasing intake charge velocity for improved efficiency.

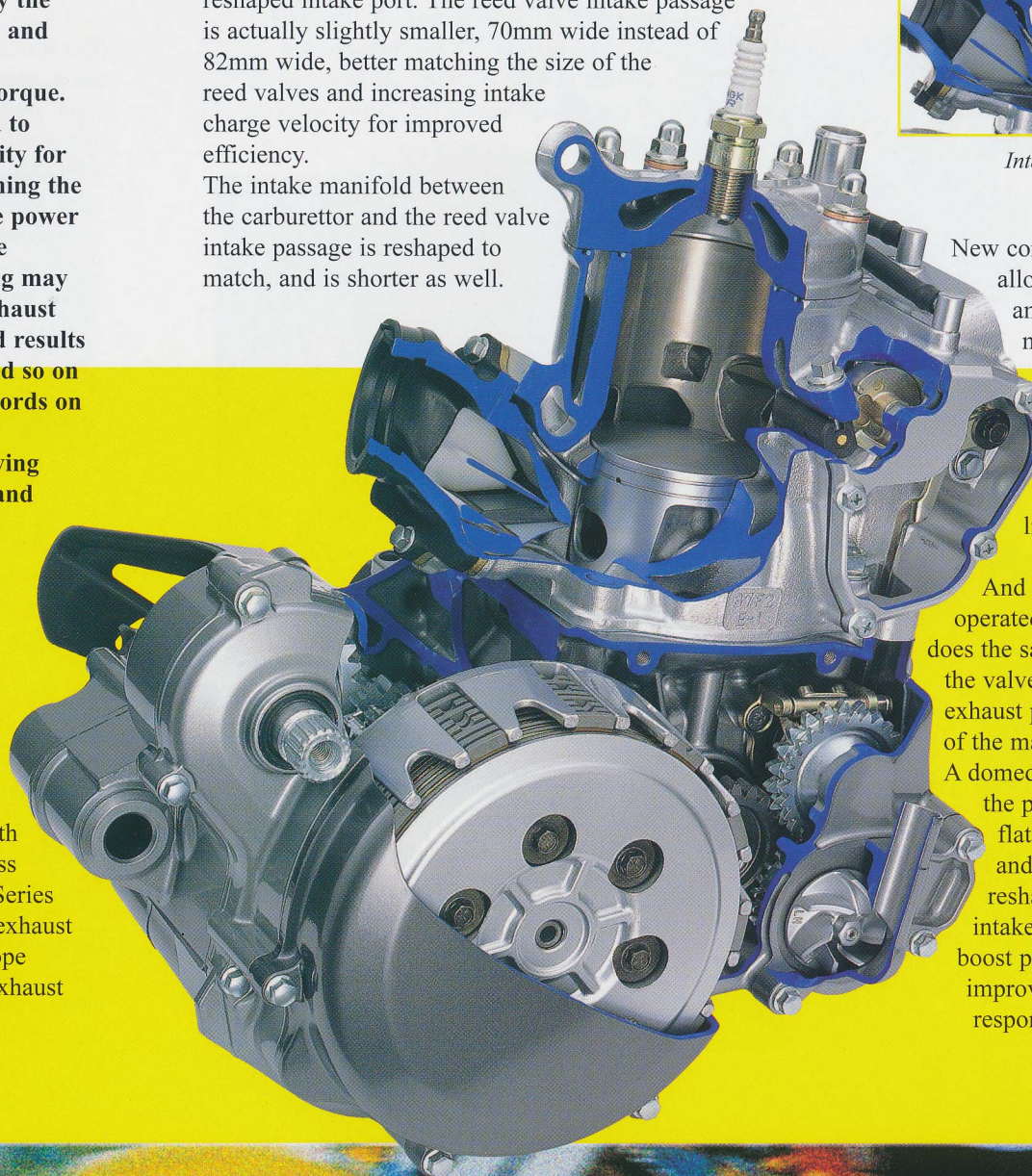
The intake manifold between the carburettor and the reed valve intake passage is reshaped to match, and is shorter as well.



Intake passage



Reed valve



New control systems for the exhaust-port valves allow the rate of valve opening as well as the amount of valve opening to be varied, matching effective port area and timing to engine rpm and improving throttle response and power delivery throughout the rpm range. A new linkage between the exhaust-port valve actuator and the exhaust-port valve itself produces linear, positive opening and closing operation.

And a new cam-operated control system does the same for the valves in the sub-exhaust ports on each side of the main exhaust port. A domed piston replaces the previously-used flat-topped piston, and the piston skirt is reshaped with a larger intake cutaway and boost port, resulting in improved throttle response.



New exhaust valve control system



Domed piston

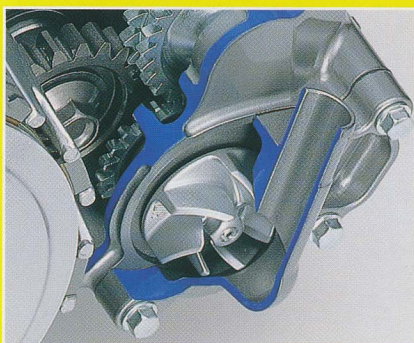
RM 250



Airbox

A new airbox is 20% larger and is fed by cool-air ducts that run through the frame covers on each side, while a new rubber cover on the front of the airbox keeps out hot air from the radiator. The cooler intake air improves throttle response.

A heavier magneto rotor increases crankshaft inertia, improving tractability and traction under acceleration. A smaller-diameter right-side crankshaft end uses a smaller oil seal (down from 38mm to 28mm), which has a smaller contact area to reduce friction by about 40%.



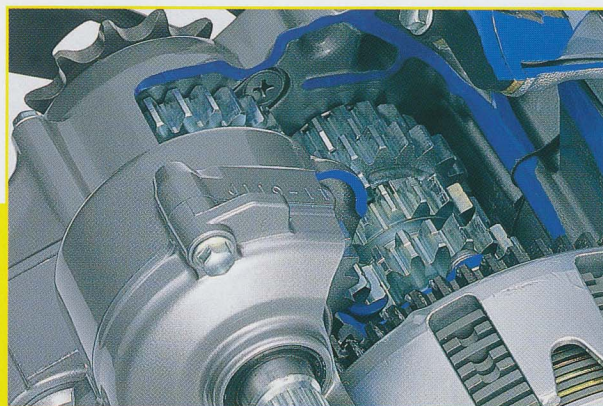
*New water pump
impeller blade*

Reshaped water pump impeller blades reduce mechanical losses, and the impeller itself attaches to the water pump shaft with a nut instead of a bolt, making the assembly simpler and lighter. The water pump shaft is smaller, 8mm instead of 12mm, accepting a smaller-diameter seal and reducing friction.

The combination of the individual changes makes the 2003 RM250's power delivery more linear and improves tractability and traction.

More Precise Shifting

The 2003 RM250's transmission output shaft features smaller, reshaped splines to allow the gears to slide into position more smoothly. Instead of the previous model's 6-rectangular-spline output-shaft, the 2003 RM250's output shaft features 18 involute-shaped splines on the 30mm section carrying the lower gears and 23 involute-shaped splines on the 25mm section carrying the higher gears.



Transmission

A new shouldered shift pawl pin fits into the coils of the shift pawl spring, instead of sitting on top of the end of the spring, improving shift pawl pin location by reducing side-to-side play. The result is less play and more positive shifting.

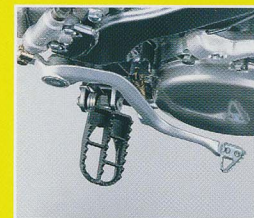
New clutch friction plate material is more durable while also producing a more precise friction point, reducing chatter. Thicker drive plates (3.15mm vs. 3.0mm) are more heat resistant and more durable. The overall result is more precise, more reliable shifting.



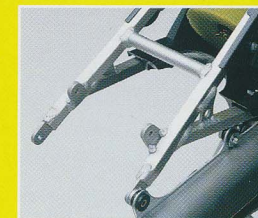
Clutch

A Tuned Chassis With Improved Suspension And Brakes

The RM250 is well-known for its excellent handling, the product of a chromium-molybdenum (chrome-moly) steel, single-backbone, double-cradle frame built with just the right amount of torsional and lateral rigidity and with race-proven geometry and suspension. And special attention to the shape of the bodywork and the transitions between the seat and the tank, sidecovers and rear fender make it easier for the rider to move around and transfer weight.



*Footpeg and rear
brake pedal*



Rear subframe

For 2003, the footpeg mounts are reshaped to further avoid packing up with mud on a wet track, and the footpegs are now 10mm longer, 100mm versus 90mm, for better boot-sole traction. The rear brake pedal mount is moved up to help keep the brake pivot from dragging on the ground when cornering in deep wheel tracks or ruts. The relocated brake pedal mount allows the use of a straighter brake pedal. The bolt-on rear subframe has detail changes to accommodate the new airbox, and the cross-brace tube behind the airbox is now round in cross-section instead of square, improving air flow to the airbox and also slightly reducing weight.

Special engineering attention went into making the cartridge front forks more responsive, smoother and plusher in the middle of the travel. A new damping piston features straighter oil flow passageways and delivers more linear damping, and a new rubber bump stop helps eliminate fork bottoming. Front fork travel is 300mm (11.8 inches).



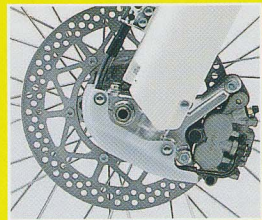
Front forks



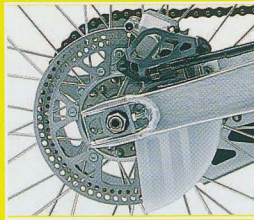
Rear shock

The piggyback-reservoir rear shock is redesigned and simplified to reduce compression damping at very low piston speeds, making the damping more linear and improving traction while accelerating.

The front wheel rim is thicker in the centre and on the edges, improving durability, and the front wheel spacer has a lip to help locate the front axle more easily when the wheel is installed.



Front brake



Rear brake

The front and rear brake discs have a new hole pattern designed to reduce squealing and pad wear while improving braking power and feel. A new rear brake pad compound contributes to stopping power and also lasts longer.



Brilliant Chrome Graphics, With Clear Lamination

The 2003 Suzuki RM250 stands out with its bright Suzuki Champion Yellow colour and brilliant chrome side graphics, and an extra-thick clear plastic lamination helps keep those graphics looking good. The front and side number plates are white, ready for the application of racing numbers.



Chrome side graphics



RM 125



Stronger Throttle Response And A Broader Powerband

The 2003 RM125 is the latest version of the racebike that made Travis Pastrana famous, with a broader powerband and stronger throttle response, producing significantly more mid-range power and torque with no loss of high-rpm performance. That translates into better lap times with quicker acceleration and improved rear-wheel traction.



Airbox



Radiator

Much of the powerband improvement came from redesigned exhaust-port valves and more precise control of those valves. A new actuation system controls how far and how fast the valves open and close, matching exhaust port timing and area to engine rpm to improve throttle response and power delivery. New ducts in the sidecovers feed cool air to the airbox, while a new rubber cover keeps air warmed by the radiator from entering the front of the airbox. The subframe cross-brace tube located behind the airbox is now round in cross-section instead of square, improving air flow to the airbox and also slightly reducing weight. The radiator is about 10% larger, with 11 rows instead of the previous model's 10 rows. A stronger shift-cam stopper spring and a shouldered shift pawl pin contribute to more precise shifting. The shouldered shift pawl pin fits into the coils of the shift pawl spring, instead of sitting on top of the end of the spring, reducing side-to-side play.

Even Lighter Handling, With Balanced Suspension Response

The RM125 built its reputation with handling to match its engine performance, the type of handling that gives a rider a choice of lines, inside or outside, to make a critical pass. It's the type of handling that comes from the right combination of geometry, frame rigidity and suspension response.



response and improve response over small bumps. The inner cartridge rod and pipe nut are now made of aluminum alloy instead of steel, reducing weight, and the spring guide bush is now metal instead of plastic, increasing durability. The fork cap head is now hexagonal instead of oval and can be turned with a conventional wrench instead of requiring a special tool, simplifying maintenance.

The 2003 RM125's single-backbone, double-cradle chrome-moly steel frame has detail refinements, while the mid-stroke response of the front forks and rear shock has been improved. Slightly stiffer fork springs allow the use of less compression damping, and reshaped and resized compression damping valves help smooth mid-stroke



Front forks



Front brake



Rear brake

The piggyback-reservoir rear shock has revised rebound and compression damping, again aimed at improving mid-stroke and low-speed response, improving acceleration traction. The shock shaft has been hardened for durability, and the reservoir cap head is hexagonal instead of oval.

The brake discs have reshaped holes to reduce squealing and pad wear while improving braking power and feel, and the rear brake pad material provides more stopping power and longer pad life. The centre and lip sections of front wheel rim are thicker for durability and the reshaped front wheel spacer helps locate the axle properly when the wheel is installed.



Rear shock

Footpeg and rear brake pedal



The footpeg mounts are redesigned to avoid becoming packed with mud on a wet track, and the rear brake pedal mount has been moved up to keep it from dragging on the ground in rutted corners. As a result, the rear brake lever can be straighter, slightly reducing weight. The footpegs are now 10mm longer for enhanced boot grip.

The seat is reshaped, lowering the riding position by 7mm, and the seat cushion foam is about 8% firmer to compensate for the reduced thickness.



New seat

The seat cover is now made of thicker vinyl, increasing durability.

Bright Yellow Bodywork, With Brilliant Chrome Graphics And Clear Lamination



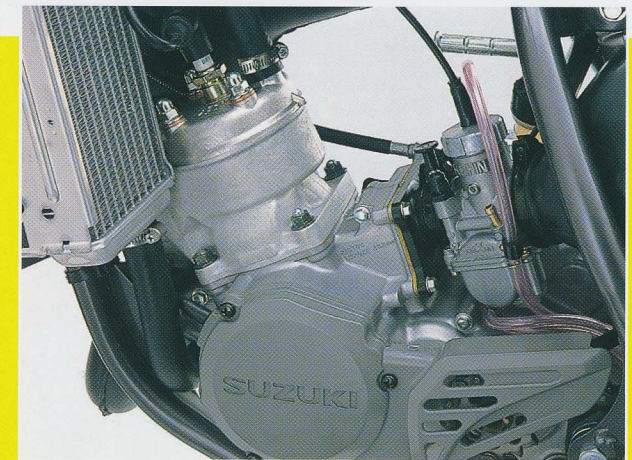
The 2003 Suzuki RM125's brilliant chrome side graphics stand out against its bright Suzuki Champion Yellow colour, and an extra-thick clear plastic lamination helps keep those graphics looking good. The number plates are white, ready for the application of racing numbers.

RM 85 / 85L



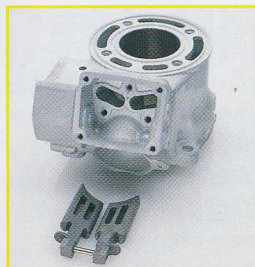
Class Domination, In Regular And Big-wheel

The RM85 already dominates its class and is the choice for young up-and-comers like Davi Millsaps and Nico Issi. For 2003 there's a new big-wheel version for larger kids, with 19 and 16-inch front and rear wheels versus the standard version's 17 and 14-inch front and rear wheels. Like its bigger brothers, the RM85 features aggressive styling in bright Suzuki Champion Yellow with white number plates, ready for racing numbers.



84.7cc liquid-cooled reed-valve engine

The RM85's high-revving, 48x46.8mm, 84.7cc reed-valve engine, already completely redesigned, makes more than enough power and torque to be competitive, with dual one-piece oval-shaped exhaust valves for increased low-rpm power. Like its bigger brothers, the RM85 has an aluminum-alloy cylinder bore plated with Suzuki's own race-proven nickel-phosphorus-silicon-



Aluminum-alloy cylinder

carbide coating (SCEM, or Suzuki Composite Electrochemical Material). SCEM is lighter, lasts longer and transfers heat better than a conventional cast-iron cylinder liner, allowing closer piston clearance for better sealing and more power.



Crankshaft

Big-end bearing thrust-washers contribute to crankshaft durability and reduce engine vibration, and the Keihin PE28 carburettor not only delivers strong throttle response but also is designed to be easily re-jetted. A radiator off the RM125 keeps the RM85 cool despite its class-leading performance.



Keihin PE28 carburettor

The RM85's single-backbone, double-cradle frame is made of high-tensile-strength steel tubing with inverted cartridge front forks and an extruded aluminum-alloy single-shock swingarm. Front fork compression and rebound damping are adjustable, with 20 compression damping positions (clicks) and three turns of rebound damping adjustment. The rear shock is fully adjustable for spring preload with four compression damping positions (clicks) and 16 rebound damping positions (clicks). Front wheel travel is 275mm (10.8 inches) and rear-wheel travel is 278mm (10.9 inches).



While the RM85 and big-wheel RM85L share the same engine and frame, there are detail chassis changes to accommodate the RM85L's larger wheels. The RM85L has a longer swingarm (512mm vs. 482mm), and a longer wheelbase (1,280mm vs. 1,240mm, or 50.4 inches vs. 48.4 inches).



1,240mm (48.4 inches)



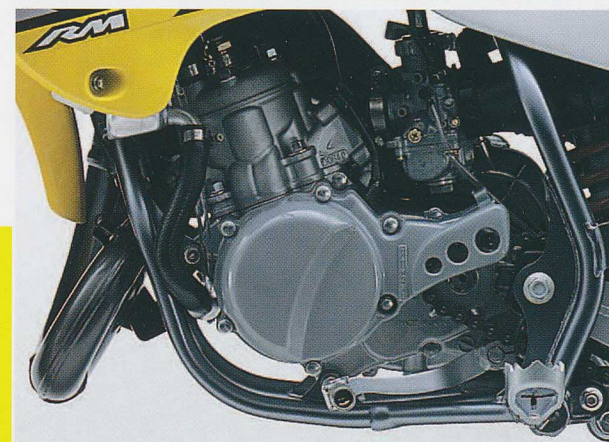
1,280mm (50.4 inches)

RM 65



A 65-class Powerhouse

Mini-motocross includes classes for kids of all sizes and age, and the new RM65 is built for younger riders. It features aggressive styling in Suzuki Champion Yellow, with a 64cc liquid-cooled reed-valve engine designed with the same kind of power-enhancing features found in the larger RM models.



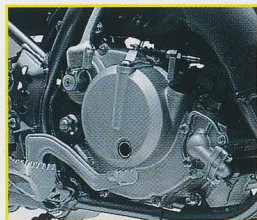
64cc liquid-cooled reed-valve engine

Like all the RMs, it features a composite-electro-plated aluminum cylinder for better heat transfer and better piston sealing and power. The exhaust-port bridge is convex, reducing scuffing for longer piston life, and the cylinder itself is bolted directly to the crankcases without cylinder stud bolts. Wide, dual O-rings on the head pipe improve exhaust-system-to-cylinder sealing, and the oval-section exhaust silencer can be repacked.



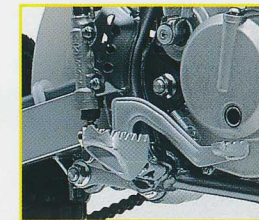
Exhaust system

The engine is tuned to produce the type of mid-range torque and smooth throttle response that youngsters appreciate, with a large airbox, 24mm carburettor, four-petal reed valve and CDI ignition. The transmission and clutch are built for smooth-shifting and short movement, with the shift drum riding in needle roller bearings and the ends of the shift forks hardened to resist wear. The oil sight window also makes it easy to check the transmission oil level.



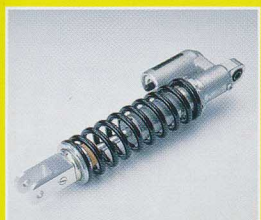
Clutch

Versatile Chassis And Suspension



Footpeg

The left rear subframe tube is detachable, allowing easier access to the air filter and rear shock. Wide, cast-steel footpegs ride on thick brackets.



Rear Shock

The RM65 chassis is designed to accommodate a range of rider heights and weights. The single-backbone, dual-cradle high-tensile-steel-tube frame carries a rectangular steel swingarm using a progressive suspension linkage. Seat height can be adjusted with optional-

length link rods available in 1mm length increments. Each 1mm change in link rod length raises or lowers the seat by 2mm.

Relatively flat handlebars work for riders with varying arm lengths, and tapered roller bearings in the steering head reduce the effort needed to turn the bars.



Handlebars

Leading-axle 33mm front forks with 0.27kgf/mm-rated springs deliver 210mm (8.3 inches) of wheel travel and feature adjustable rebound damping. A nitrogen-charged piggyback reservoir rear shock carries a 4.9kgf/mm-rated spring and delivers 240mm (9.4 inches) of wheel travel through a progressive linkage. Aluminum rims carry a 60/100-14 front tyre and a 80/100-12 rear tyre.



Cushion lever



Link rods





SPECIFICATIONS

	RM250	RM125	RM85L	RM85	RM65
Overall length	2,175mm (85.6 in)	2,145mm (84.4 in)	1,895mm (74.6 in)	1,805mm (71.1 in)	1,590mm (62.6 in)
Overall width	840mm (33.1 in)	840mm (33.1 in)	735mm (28.9 in)	735mm (28.9 in)	760mm (29.9 in)
Overall height	1,275mm (50.2 in)	1,275mm (50.2 in)	1,165mm (45.9 in)	1,100mm (43.3 in)	955mm (37.6 in)
Wheelbase	1,470mm (57.9 in)	1,450mm (57.1 in)	1,280mm (50.4 in)	1,240mm (48.8 in)	1,120mm (44.1 in)
Ground clearance	350mm (13.8 in)	350mm (13.8 in)	355mm (14.0 in)	325mm (12.8 in)	305mm (12.0 in)
Seat height	965mm (38.0 in)	960mm (37.8 in)	875mm (34.4 in)	850mm (33.5 in)	760mm (29.9 in)
Dry mass	96kg (212 lbs)	87kg (192 lbs)	69kg (152 lbs)	65kg (143 lbs)	57kg (125 lbs)
Engine Type	Two-stroke, liquid-cooled	Two-stroke, liquid-cooled	Two-stroke, liquid-cooled	Two-stroke, liquid-cooled	Two-stroke, liquid-cooled
Intake system	Piston reed valve	Crankcase reed valve	Crankcase reed valve	Crankcase reed valve	Piston reed valve
Bore x Stroke	66.4mm x 72.0mm	54.0mm x 54.5mm	48.0mm x 46.8mm	48.0mm x 46.8mm	44.5mm x 41.6mm
Displacement	249cc (15.2 cu. in)	124cc (7.6 cu. in)	84.7cc (5.2 cu. in)	84.7cc (5.2 cu. in)	64cc (3.91 cu. in)
Compression ratio	8.9 / 10.7 : 1 (Ex valve open/Ex valve close)	8.9 / 11.1 : 1 (Ex valve open/Ex valve close)	9.5 / 11.1 : 1 (Low speed/High speed)	9.5 / 11.1 : 1 (Low speed/High speed)	8.4 : 1
Carburettor	KEIHIN PWK38PWJ/TPS, single	MIKUNI TMX38S, single	KEIHIN PE28, single	KEIHIN PE28, single	MIKUNI VM24 single
Lubrication system	Fuel/oil premixture of 30 : 1	Fuel/oil premixture of 30 : 1	Fuel/oil premixture of 30 : 1	Fuel/oil premixture of 30 : 1	Fuel/oil premixture of 32 : 1
Clutch	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type
Transmission	5-speed constant mesh	6-speed constant mesh	6-speed constant mesh	6-speed constant mesh	6-speed constant mesh
Primary reduction ratio	3.000 (63/21)	3.368 (64/19)	3.444 (62/18)	3.444 (62/18)	3.500 (77/22)
Gear ratios, Low	1.800 (27/15)	2.071 (29/14)	2.545 (28/11)	2.545 (28/11)	2.846 (37/13)
2nd	1.470 (25/17)	1.687 (27/16)	1.933 (29/15)	1.933 (29/15)	2.125 (34/16)
3rd	1.210 (23/19)	1.444 (26/18)	1.571 (22/14)	1.571 (22/14)	1.722 (31/18)
4th	1.000 (21/21)	1.200 (24/20)	1.333 (20/15)	1.333 (20/15)	1.428 (30/21)
5th	0.869 (20/23)	1.052 (20/19)	1.166 (21/18)	1.166 (21/18)	1.217 (28/23)
6th	—	0.950 (19/20)	1.045 (23/22)	1.045 (23/22)	1.083 (26/24)
Final reduction ratio	3.769 (49/13)	4.083 (49/12)	3.615 (47/13)	3.357 (47/14)	3.615 (47/13)
Front suspension	KAYABA, telescopic, pneumatic/coil spring, oil damped, compression damping force 20-way adjustable, rebound damping force 18-way adjustable	SHOWA, telescopic, pneumatic/coil spring, oil damped, compression damping force 22-way adjustable, rebound damping force 20-way adjustable	SHOWA, telescopic, pneumatic/coil spring, oil damped, compression damping force 20-way adjustable, rebound damping force 3-turn adjustable	SHOWA, telescopic, pneumatic/coil spring, oil damped, compression damping force 20-way adjustable, rebound damping force 3-turn adjustable	Telescopic, rebound damping force 4-way adjustable
Rear suspension	KAYABA, link type, spring preload fully adjustable, high speed compression damping force 3-turn adjustable, low speed compression damping force 16-way adjustable, rebound damping force 18-way adjustable	SHOWA, link type, spring preload fully adjustable, high speed compression damping force 4-turn adjustable, low speed compression damping force 16-way adjustable, rebound damping force 19-way adjustable	SHOWA, link type, spring preload fully adjustable, compression damping force 2.5-turn adjustable, rebound damping force 2.5-turn adjustable	SHOWA, link type, spring preload fully adjustable, compression damping force 2.5-turn adjustable, rebound damping force 2.5-turn adjustable	Link-type, spring preload fully adjustable, rebound damping force 4-way adjustable
Caster	27° 30'	27° 30'	28°	28° 30'	27°
Trail	115mm (4.53 in)	115mm (4.53 in)	85mm (3.3 in)	87mm (3.4 in)	60 mm (2.36 in)
Front/Rear brake	Disc/Disc	Disc/Disc	Disc/Disc	Disc/Disc	Disc/Disc
Front/Rear tire size	80/100-21 51M.110/90-19 62M	80/100-21 51M.100/90-19 57M	70/100-19 42M.90/100-16 52M	70/100-17 40M.90/100-14 49M	60/100-14 30M.80/100-12 41M
Fuel tank	8.0 L (2.1/1.8 US/Imp gal)	8.0 L (2.1/1.8 US/Imp gal)	5.0 L (1.3/1.1 US/Imp gal)	5.0 L (1.3/1.1 US/Imp gal)	3.8 L (1.0/0.8US/Imp gal)
Body color	YU1:Champion Yellow No.2	YU1:Champion Yellow No.2	YU1:Champion Yellow No.2	YU1:Champion Yellow No.2	YU1:Champion Yellow No.2

Specifications shown have been achieved by production models under standard operating conditions. Data is intended to describe the motorcycle fairly but may not apply to every machine. Suzuki reserves the right to change specifications, equipment, materials, colour or any other item without notice. Actual colours may differ from the colours printed in this brochure. Please confirm the full specification of a particular machine with your dealer prior to purchase. All details correct at time of going to print.

Always wear approved helmet, eye protection and protective clothing. Read and understand the owner's manual before riding the machine. Never ride under the influence of alcohol or other drugs.
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