Motorcycle
2012 Model: RM85/LL2
Date: March 2011

MSRP $4,149

Champion Yellow No.2 (YU1)

Key Features

1. 84.7cm3, 2-stroke, liquid-cooled, crankcase reed-valve engine with bore and stroke of 48.0 mm x 46.8 mm. The cylinder features Suzuki Composite Electrochemical Material (SCEM) for durability, weight reduction and effective heat transfer to get superior class performance.

2. Exhaust valves made of aluminum to match well the expansion rate of the cylinder itself improve sealing.

3. The exhaust valve governor and actuator with good throttle response and tractability.

4. Digital CDI map offers the suitable engine performance at high rpm.

5. Smooth shifting 6-speed transmission features a fully worked-out shift mechanism, including strong shift-drum detent spring and needle bearing on the left side of the shift drum.

6. Knurled shift-pedal tip delivers excellent grip and shift feel.

7. Tubular steel frame and aluminum swingarm with thick wall for performance on the track, especially in the corners.

8. SHOWA inverted front forks are completely adjustable for rider weight, style and ability. A large-diameter fully-adjustable rear shock absorber produces plush feel with strong bottoming resistance. The front forks offer 275 mm (10.8 in.) and the rear 277 mm (10.9 in.) of wheel travel.

9. 2-piston caliper front brake with 220 mm (8.7 in.) large-diameter disc and rear brake with 200 mm (7.9 in.) disc provide excellent braking performance.

10. Light narrow-diameter front and rear brake hose. Front brake hose is routed behind the fork leg, eliminating the need for a brake hose cover and reducing weight.

11. Rigid rear brake caliper with reliable braking performance, long pad life and easy maintenance. Plastic rear brake caliper guard reduces the possibility of deformation and saving weight as well.

12. A forged aluminum-alloy rear brake pedal gives the rider accurate braking feel.

13. Footpegs are made of cast chrome-molybdenum steel, instead of stamped steel, making them more durable with better grip.

14. A long clutch lever makes it easy to accurately locate and work the engagement point during starts and when clutching off at corners.

15. Each side of the seat has textured surface for better knee gripping.

RM85L
MSRP $4,199

The RM85L features larger 19-inch front/16-inch rear tires, 875mm (34.4 in) seat height and front and rear disc brakes.

SPECIFICATIONS MODEL: RM85/LL2

DIMENSIONS AND CURB MASS

Overall length	1805 mm (71.1 in)	RM85
	1895 mm (74.6 in)	RM85L
Overall width	735 mm (28.9 in)	
Overall height	1100 mm (43.3 in)	RM85
	1165 mm (45.9 in)	RM85L
Wheelbase	1240 mm (48.8 in)	RM85
	1280 mm (50.4 in)	RM85L
Ground clearance	325 mm (12.8 in)	RM85
	355 mm (14.0 in)	RM85L
Seat height	850 mm (33.5 in)	RM85
	875 mm (34.4 in)	RM85L
Curb mass	73 kg (161 lbs)	RM85
	74 kg (163 lbs)	RM85L

ENGINE

Type	2-stroke, liquid-cooled
Intake system	Crankcase reed valve
Number of cylinders	1
Bore	48.0 mm (1.890 in)
Stroke	46.8 mm (1.843 in)
Displacement	84.7 cm3 (5.2 cu. in)
Corrected compression ratio	9.5/10.9:1 (Ex valve open/Ex valve close)
Carburetor	KEIHIN PE28, single
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	Fuel/oil premixture of 30 : 1

DRIVE TRAIN

Clutch	Wet multi-plate type	
Transmission	6-speed constant mesh	
Gearshift pattern	1-down, 5-up	
Primary reduction ratio	3.444 (62/18)	
Gear ratios, Low	2.545 (28/11)	
2nd	1.933 (29/15)	
3rd	1.571 (22/14)	
4th	1.333 (20/15)	
5th	1.166 (21/18)	
Top	1.045 (23/22)	
Final reduction ratio	3.357 (47/14)	RM85
	3.615 (47/13)	RM85L
Drive chain	DID428DS, 118 links	RM85
	DID428DS, 122 links	RM85L

CHASSIS

Front suspension	Telescopic, pneumatic/coil spring, oil damped	
Rear suspension	Link type, coil spring, oil damped	
Front fork stroke	275 mm (10.8 in)	
Rear wheel travel	277 mm (10.9 in)	
Caster	28°30’	RM85
	28°	RM85L

Trail	87 mm (3.43 in)	RM85
	85 mm (3.35 in)	RM85L

Steering angle	45° (right & left)
Turning radius	1.9 m (6.2 ft) RM85
	2.0 m (6.6 ft) RM85L
Front brake	Disc brake
Rear brake	Disc brake
Front tire	70/100-17 40M RM85
	70/100-19 42M RM85L
Rear tire	90/100-14 49M RM85
	90/100-16 52M RM85L

ELECTRICAL

Ignition type	Electronic ignition (CDI)
Ignition timing	15° B.T.D.C. at 11000 rpm
Spark plug	NGK BR10ES

CAPACITIES

Fuel tank	5.0 L (1.3/1.1 US/Imp gal)
Transmission oil, oil change	550 ml (0.6/0.5 US/Imp qt)
overhaul	650 ml (0.7/0.6 US/Imp qt)
Coolant	570 ml (0.6/0.5 US/Imp qt)

Model: RM85/LL0 P-03, 28 Date: June 9, 2009

SERVICE DATA

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Piston to cylinder clearance	0.040 – 0.050 (0.0016 – 0.0020)		0.120 (0.0047)
Cylinder bore	48.000 – 48.015 (1.8898 – 1.8904) Measure 15 (0.59) from the top surface.		Nicks or scratches
Piston diam.	47.955 – 47.970 (1.8880 – 1.8886) Measure 16 (0.63) from the skirt end.		47.880 (1.8850)
Cylinder distortion	—		0.05 (0.002)
Cylinder head distortion	—		0.05 (0.002)
Piston ring free end gap	N	Approx. 4.0 (0.16)	3.2 (0.13)
Piston ring to groove clearance	0.020 – 0.060 (0.0008 – 0.0024)		—
Piston ring end gap	0.20 – 0.40 (0.008 – 0.0016)		0.80 (0.031)
Piston pin bore	14.002 – 14.008 (0.5513 – 0.5515)		14.030 (0.5524)
Piston pin O.D.	13.995 – 14.000 (0.5510 – 0.5512)		13.980 (0.5504)
Reed valve clearance	—		0.2 (0.008)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.003 – 18.011 (0.7088 – 0.7091)	18.040 (0.7102)
Crank web to web width	44.9 – 45.1 (1.767 – 1.775)	—
Crankshaft runout	—	0.05 (0.002)

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10 – 15 (0.4 – 0.6)	—
Drive plate thickness	2.7 – 2.9 (0.106 – 0.114)	2.4 (0.094)
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	41.5	39.4 (1.55)

RADIATOR

ITEM	STANDARD	LIMIT
Radiator cap valve opening pressure	110 kPa (1.1 kgf/cm^2, 16 psi)	—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD			LIMIT
Primary reduction ratio		3.444 (62/18)			—
Final reduction ratio		3.357 (47/14)		RM85	—
		3.615 (47/13)		RM85L	—
Gear ratios	Low	2.545 (28/11)			—
	2nd	1.933 (29/15)			—
	3rd	1.571 (22/14)			—
	4th	1.333 (20/15)			—
	5th	1.166 (21/18)			—
	Top	1.045 (23/22)			—
Shift fork to groove clearance		No.1, No.2 & No.3	0.05 – 0.25 (0.002 – 0.010)		0.45 (0.018)
Shift fork groove width		No.1	3.95 – 4.05 (0.156 – 0.159)		—
		No.2 & No.3	4.45 – 4.55 (0.175 – 0.179)		—
Shift fork thickness		No.1	3.80 – 3.90 (0.150 – 0.154)		—
		No.2 & No.3	4.30 – 4.40 (0.169 – 0.173)		—

DRIVE CHAIN

Unit: mm (in)

ITEM	STANDARD			LIMIT
Drive chain	Type	D.I.D 428DS		—
	Links	118	RM85	—
		122	RM85L	—
	20-pitch length	—		259 (10.2)
Drive chain slack	40 – 50 (1.6 – 2.0)			—

CARBURETOR

ITEM	SPECIFICATION
Carburetor type	KEIHIN PE28
Bore size	28 mm
I.D. No.	03B3
Float height	19.0 ± 0.5 mm (0.75 ± 0.02 in)
Main jet (M.J.)	#128
Jet needle (J.N.)	24NAAH-3rd
Slow jet (S.J.)	#50
Air screw (P.A.S.)	2 turns out
Throttle cable play	2 – 4 mm (0.08 – 0.16 in) at the throttle grip

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Spark plug	Type	NGK: BR10ES	
	Gap	0.7 – 0.8 (0.028 – 0.031)	
Spark performance	Over 8 (0.3) at 1 atm.		
Ignition coil resistance	Primary	0.2 – 1.0 Ω	W/Bl – Ground
	Secondary	12 – 20 kΩ	Plug cap – Ground
Magneto coil resistance	100 – 160 Ω		B/R – R/W
	140 – 230 Ω		R/W – B/W
	240 – 380 Ω		B/R – B/W
Ignition coil primary peak voltage	200 V and more		⊕: Ground ⊖: W/Bl

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD			LIMIT
Brake lever play	5 – 20 (0.20 – 0.79)			—
Brake disc thickness	Front	2.8 ± 3.2 (0.110 ± 0.126)		2.5 (0.10)
	Rear	2.85 ± 3.15 (0.112 ± 0.124)		2.5 (0.10)
Brake disc runout	—			0.30 (0.012)
Master cylinder bore	Front	11.000 – 11.043 (0.4331 – 0.4348)		—
	Rear	12.700 – 12.743 (0.5000 – 0.5017)		—
Master cylinder piston diam.	Front	10.957 – 10.984 (0.4314 – 0.4324)		—
	Rear	12.657 – 12.684 (0.4983 – 0.4994)		—
Brake caliper cylinder bore	Front	30.230 – 30.306 (1.1902 – 1.1931)		—
	Rear	27.000 – 27.076 (1.0630 – 1.0660)		—
Brake caliper piston diam.	Front	30.150 – 30.200 (1.1870 – 1.1890)		—
	Rear	26.920 – 26.970 (1.0600 – 1.0618)		—
Wheel rim runout	Axial	—		2.0 (0.08)
	Radial	—		2.0 (0.08)
Wheel axle runout	Front	—		0.25 (0.010)
	Rear	—		0.25 (0.010)
Tire size	Front	70/100-17 40M	RM85	—
		70/100-19 42M	RM85L	—
	Rear	90/100-14 49M	RM85	—
		90/100-16 52M	RM85L	—

SUSPENSION

Unit: mm (in)

ITEM	STANDARD		LIMIT
Front fork stroke	275 (10.8)		—
Front fork spring free length	—		444 (17.48)
Front fork spring rate (each leg)	2.8 N/mm (0.28 kgf/mm)		—
Front fork oil level	124 (4.88)		—
Front fork damping force adjuster	Rebound	1 and 1/2 turns out	—
	Compression	7 clicks out	—
Front fork air pressure	0 kPa (0 kgf/cm^2, 0 psi)		—
Rear shock absorber gas pressure	1 000 kPa (10 kgf/cm^2, 142 psi)		—
Rear shock absorber spring pre-set length	RM85: 3.1 mm (0.12 in) compressed from spring free length RM85L: 4.8 mm (0.19 in) compressed from spring free length		—
Rear shock absorber damping force adjuster	Rebound	2 turns out	—
	Compression	3/4 turns out	—
Rear shock absorber spring rate	RM85: 46 N/mm (4.6 kgf/mm) RM85L: 48 N/mm (4.8 kgf/mm)		
Rear wheel travel	277 (10.9)		—
Swingarm pivot shaft runout	—		0.3 (0.01)

TIRE PRESSURE

Front & Rear	70 – 110 kPa (0.7 – 1.1 kgf/cm^2, 10 – 16 psi)

FUEL + OIL + COOLANT

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 90 pump octane (R/2 + M/2 method).		P-03
	Unleaded gasoline minimum 95 octane (RON)		P-28
Fuel tank capacity	5.0 L (1.3/1.1 US/Imp gal)		
Engine oil type	SUZUKI CCI SUPER 2-CYCLE MOTOR LUBURICANT or equivalent Two Cycle Racing Lubricant		P-03
	MOTUL 800 2T FACTORY LINE OFF ROAD or equivalent Two Cycle Racing Lubricant		P-28
Air cleaner element oil type	MOTUL AIR FILTER OIL or equivalent filter oil		
Engine coolant type	Use an anti-freeze & summer engine coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50:50.		
Engine coolant capacity	570 ml (1.2/1.0 US/Imp qt)		
Transmission oil type	SAE 10W-40, API SF/SG or SH/SJ with JASO MA		
Transmission oil capacity	Change	550 ml (1.16/0.97 US/Imp qt)	
	Overhaul	650 ml (1.37/1.14 US/Imp qt)	
Brake fluid oil type	DOT 4		
Front fork oil type	SUZUKI fork oil SS-05 or an equivalent fork oil		
Front fork oil capacity (each leg)	351 ml (11.86/12.36 US/Imp oz)		
Rear shock absorber oil type	SUZUKI REAR SUSPENSION OIL SS-25 or an equivalent rear suspension oil		
Rear shock absorber oil capacity	195 ml (6.6/6.9 US/Imp oz)		

TIGHTENING TORQUE

PART	N·m	kgf-m	lbf-ft
Cylinder head nut	28	2.8	20.5
Magneto rotor nut	35	3.5	25.5
Cylinder nut	25	2.5	18.0
Crankcase bolt	10	1.0	7.3
Clutch sleeve hub nut	70	7.0	50.5
Primary drive gear nut	70	7.0	50.5
Spark plug	28	2.8	20.5
Transmission oil drain plug	23	2.3	16.5
Transmission oil level screw	5.5	0.55	4.0
Water pump drain plug	5.5	0.55	4.0
Handlebars clamp bolt	26	2.6	19.0
Front fork upper clamp bolt (right and left)	23	2.3	16.5
Front fork lower clamp bolt (right and left)	23	2.3	16.5
Steering stem head nut	65	6.5	47.0
Front fork center bolt	55	5.5	40.0
Fork cylinder inner rod lock-nut	20	2.0	14.5
Front fork cap bolt	35	3.5	25.5
Master cylinder mounting bolt (front)	10	1.0	7.3
Master cylinder mounting bolt (rear)	10	1.0	7.3
Rear master cylinder rod lock-nut	18	1.8	13.0
Brake hose adaptor (front)	18	1.8	13.0
Brake hose union bolt (front and rear)	23	2.3	16.5
Brake caliper mounting bolt (front)	23	2.3	16.5
Brake caliper mounting bolt (rear)	23	2.3	16.5
Brake bleeder valve (front and rear)	7.5	0.75	5.5
Disc mounting screw (front and rear)	8.5	0.85	6.0
Disc mounting nut (front)	8.5	0.85	6.0
Front axle nut	44	4.4	32.0
Engine mounting nut (front)	45	4.5	32.5
Engine mounting nut (middle)	43	4.3	31.0
Rear axle nut	72	7.2	52.0
Rear sprocket nut	40	4.0	29.0
Drive chain tensioner roller bolt	41	4.1	29.5
Spoke nipple	4	0.4	3.0
Rear swingarm pivot nut (engine mounting)	58	5.8	42.0
Rear shock absorber mounting nut (upper and lower)	60	6.0	43.5
Rear cushion lever center nut	80	8.0	58.0
Rear cushion lever front nut	60	6.0	43.5
Rear cushion rod nut	80	8.0	58.0