



Motorcycle
2012 Model: DR650SEL2
Date: August 2011

MSRP \$5,999



Solid Iron Gray (YUD)

Key Features

1. 644cm³, 4-stroke, air-cooled with Suzuki Advanced Cooling System (SACS) engine is tuned with emphasis on powerful performance at low-to-mid engine rpm range.
2. Suzuki Composite Electrochemical Material (SCEM)-plated cylinder for durability, weight reduction and superior heat transfer.
3. Digitally mapped DC-CDI ignition system provides accurate ignition timing to maintain efficient combustion.
4. Convenient electric starter combines with mechanical automatic decompression system for easy and quick start.
5. Lightweight and compact low-maintenance battery.
6. Gear-driven single counter balancer system minimizes engine vibration for comfortable ride.

7. Large MIKUNI 40mm (1.6 in) carburetor keeps smooth intake flow and quick throttle response.
8. 5-speed wide-ratio transmission for easy riding.
9. Light, durable stainless steel muffler.
10. Innovative cartridge front forks combine the advantage of conventional and inverted forks; smooth progressive action and less below-axle extension.
11. Link-type rear suspension with piggyback-reservoir shock absorber and adjustable compression damping provides stable performance.
12. Front and rear suspensions both provide long 260mm (10.2 in) wheel travels for superb maneuverability.
13. Lightweight, compact, rigid semi-double cradle frame is built to provide excellent on/off road riding.
14. Hollow type wheel axles and aluminum swingarm keep less unsprung weight.
15. Lightweight 290mm (11.4 in) front floating-disc brake with 2-piston caliper and 240mm (9.4 in) rear disc brake with 2-piston caliper together provide reliable stopping power.
16. Carefully designed 90/90-21 front and 120/90-17 rear tires with on/off tread pattern.
17. Well-cushioned seat, die-cast aluminum footpegs and grab bars on both sides together offer comfortable ride for pillion rider.
18. Full on-road lighting system with bright 60/55W halogen headlight.
19. Seat height is optionally lowered by 40mm (from 885mm to 845mm) at Suzuki dealer. Shorter sidestand is also supplied with this option to match lower height. (4-stroke bulletin - DR 18)



SPECIFICATIONS**MODEL: DR650SEL2****DIMENSIONS AND CURB MASS**

Overall length.....	2255 mm (88.8 in)
	2235 mm (88.0 in).....(Low seat)
Overall width	865 mm (34.1 in)
Overall height.....	1195 mm (47.0 in)
	1155 mm (45.5 in) (Low seat)
Wheelbase.....	1490 mm (58.7 in)
	1475 mm (58.1 in)(Low seat)
Ground clearance	265 mm (10.4 in)
	225 mm (8.9 in) (Low seat)
Seat height.....	885 mm (34.8 in)
	845 mm (33.0 in) (Low seat)
Curb mass	166 kg (366 lbs)..... E-03, 33

ENGINE

Type.....	4-stroke, air-cooled, OHC
Number of cylinders	1
Bore	100 mm (3.937 in)
Stroke	82 mm (3.228 in)
Displacement	644 cm ³ (39.3 cu. in)
Compression ratio.....	9.5 : 1
Carburetor	MIKUNI BST40, single
Air cleaner.....	Polyurethane foam element
Starter system.....	Electric
Lubrication system.....	Wet sump
Idle speed	1500 ± 100 r/min

DRIVE TRAIN

Clutch.....	Wet multi-plate type
Transmission.....	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio.....	2.178 (61/28)
Gear ratios, Low	2.416 (29/12)
2nd.....	1.625 (26/16)
3rd.....	1.238 (26/21)
4th.....	1.000 (21/21)
Top.....	0.826 (19/23)
Final reduction ratio	2.800 (42/15)..... E-03, 33
Drive chain.....	DID525V9, 110 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension.....	Link type, coil spring, oil damped
Front fork stroke.....	260 mm (10.2 in)
	220 mm (8.7 in)(Low seat)
Rear wheel travel	260 mm (10.2 in)
	220 mm (8.7 in) (Low seat)
Caster	28° 30'
Trail.....	111 mm (4.37 in)
Steering angle.....	43° (right & left)
Turning radius.....	2.5 m (8.2 ft)
Front brake	Disc brake
Rear brake	Disc brake
Front tire	90/90-21 M/C 54S, tube type
Rear tire	120/90-17 M/C 64S, tube type

ELECTRICAL

Ignition type	Electronic ignition (CDI)
Ignition timing.....	10° B.T.D.C. at 1500 r/min
Spark plug.....	NGK CR10E or DENSO U31ESR-N
Battery	12V 28.8 kC (8 Ah)/10 HR
Generator.....	Three-phase A.C. generator
Main fuse	30A
Fuse.....	10/10A
Headlight.....	12V 60/55W
Brake/Tail light	12V 21/5W
Turn signal light.....	12V 21W
License plate light	12V 5W
Speedometer light.....	12V 1.7W
Neutral indicator light	12V 2W
High beam indicator light	12V 2W
Turn signal indicator light	12V 2W

CAPACITIES

Fuel tank, including reserve.....	12.0 L (3.2/2.6 US/Imp gal) .. E-33
	13.0 L (3.4/2.9 US/Imp gal) .. E-03
reserve.....	3.0 L (0.8/0.7 US/Imp gal)
Engine oil, oil change	2300 ml (2.4/2.0 US/Imp qt)
with filter change.....	2400 ml (2.5/2.1 US/Imp qt)
overhaul.....	2600 ml (2.7/2.3 US/Imp qt)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	33 (1.3)	—
	EX.	28 (1.1)	—
Valve clearance (when engine is cold)	IN.	0.08 – 0.13 (0.003 – 0.005)	—
	EX.	0.17 – 0.22 (0.0067 – 0.0087)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.030 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2156 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.7 (0.11)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	34.4 (1.35)
	OUTER	—	38.1 (1.50)
Valve spring tension (IN. & EX.)	INNER	58 – 66 N (5.9 – 6.7 kgf, 13.0 – 14.8 lbs) at length 27.5 mm (1.1 in)	—
	OUTER	135 – 155 N (13.8 – 15.8 kgf, 30.4 – 34.8 lbs) at length 31.0 mm (1.2 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	33.710 – 33.750 (1.3272 – 1.3287)	33.410 (1.3154)
	EX.	33.700 – 33.740 (1.3268 – 1.3283)	33.400 (1.3150)
Camshaft journal oil clearance	Right & Center	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
	Left	0.028 – 0.059 (0.0011 – 0.0023)	0.150 (0.0059)
Camshaft journal holder I.D.	Right & Center	22.012 – 22.025 (0.8666 – 0.8671)	—
	Left	17.512 – 17.525 (0.6894 – 0.6900)	—
Camshaft journal O.D.	Right & Center	21.959 – 21.980 (0.8645 – 0.8654)	—
	Left	17.466 – 17.484 (0.6877 – 0.6883)	—
Camshaft runout	—		0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.973 – 11.984 (0.4714 – 0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Piston to cylinder clearance	0.020 – 0.030 (0.0008 – 0.0012)			0.120 (0.0047)
Cylinder bore	100.000 – 100.015 (3.9371 – 3.9376)			Nicks or Scratches
Piston diam.	99.975 – 99.990 (3.9360 – 3.9366) Measure at 21 mm (0.8 in) from the skirt end.			99.880 (3.9323)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 13.5 (0.53)	10.8 (0.43)
	2nd	R	Approx. 11.4 (0.45)	9.1 (0.36)
Piston ring end gap	1st	0.30 – 0.45 (0.012 – 0.018)		0.50 (0.039)
	2nd	0.45 – 0.60 (0.018 – 0.024)		1.00 (0.039)
Compression pressure (Automatic decomp. actuated)	Approx. 850 kPa (8.5 kgf/cm², 120 psi)			—

ITEM	STANDARD		LIMIT
Piston ring to groove clearance	1st	—	0.180 (0.0071)
	2nd	—	0.150 (0.0059)
Piston ring groove width	1st	1.230 – 1.250 (0.048 – 0.049)	—
	2nd	1.210 – 1.230 (0.047 – 0.048)	—
	Oil	2.810 – 2.830 (0.110 – 0.111)	—
Piston ring thickness	1st	1.170 – 1.190 (0.0461 – 0.0469)	—
	2nd	1.150 – 1.170 (0.0453 – 0.0461)	—
Piston pin bore	23.002 – 23.008 (0.9056 – 0.9058)		23.030 (0.9067)
Piston pin O.D.	22.996 – 23.000 (0.9054 – 0.9055)		22.980 (0.9047)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	23.006 – 23.014 (0.9057 – 0.9061)	23.040 (0.9071)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10 – 0.65 (0.004 – 0.026)	1.00 (0.039)
Conrod big end width	24.95 – 25.00 (0.982 – 0.984)	—
Crankshaft runout	—	0.05 (0.002)
Crank web to web width	71.0 ± 0.1 (2.795 ± 0.004)	—

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.633 (61/28 × 30/20 × 15/30)	—
Oil pressure (at 60 °C, 140 °F)	Above 30 kPa (0.3 kgf/cm ² , 4.3 psi) Below 70 kPa (0.7 kgf/cm ² , 10.0 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Clutch lever play	10 – 15 (0.4 – 0.6)		—
Drive plate thickness	No. 1 & No. 2	2.9 – 3.1 (0.11 – 0.12)	2.6 (0.10)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		33.0 (1.30)

DRIVE TRAIN

Unit: mm (in) Except ratio

ITEM	STANDARD		LIMIT
Primary reduction ratio	2.178 (61/28)		—
Final reduction ratio	E-03, 28, 33	2.800 (42/15)	—
	E-24	2.733 (41/15)	—
Gear ratios	Low	2.416 (29/12)	—
	2nd	1.625 (26/16)	—
	3rd	1.238 (26/21)	—
	4th	1.000 (21/21)	—
	Top	0.826 (19/23)	—
Shift fork to groove clearance	0.10 – 0.30 (0.004 – 0.012)		0.50 (0.020)
Shift fork groove width	5.0 – 5.1 (0.197 – 0.200)		—
Shift fork thickness	4.8 – 4.9 (0.189 – 0.193)		—
Drive chain	Type	DAIDO: D.I.D. 525V9	—
	Links	110	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack	30 – 45 (1.2 – 1.8)		—

CARBURETOR

ITEM	SPECIFICATION		
	E-03, 28	E-33	E-24
Carburetor type	MIKUNI BST40SS	←	←
Bore size	40 mm	←	←
I.D. No.	32E1	32E6	32E3
Idle r/min	1 500 ± 100 r/min	←	←
Float height	14.7 ± 1.0 mm (0.58 ± 0.04 in)	←	←
Main jet (M.J.)	# 140	←	#140
Jet needle (J.N.)	6F23	←	6F19-3rd
Needle jet (N.J.)	Y-5M	←	Y-5
Throttle valve (Th.V.)	#95	←	←
Pilot jet (P.J.)	# 42.5	←	#42.5
Starter jet (S.J.)	#40	←	←
Pilot screw (P.S.)	PRE-SET	←	PRE-SET (1.0 turn back)
Throttle cable play (pulling cable)	2.0 – 4.0 mm (0.08 – 0.16 in)	←	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Spark plug	Type	ND.: U31ESR-N N.G.K.: CR10E		
	Gap	0.7 – 0.8 (0.028 – 0.031)		
Spark performance		Over 8 (0.3) at 1 atm.		
Ignition coil resistance	Primary	0.07 – 0.12 Ω		B – B/W
	Secondary	23 – 25 kΩ		Plug cap – Plug cap
Generator coil resistance	Charging	0.5 – 0.9 Ω		Y – Y
	Power source	0.1 – 0.2 Ω		B – W
	Pick-up	170 – 256 Ω		BI – G
Generator no-load voltage		More than 75 V (AC) at 5 000 r/min		
Generator Max. output		Approx. 200 W at 5 000 r/min		
Regulated voltage		13.0 – 16.0 V at 5 000 r/min		
Starter relay resistance		3 – 5 Ω		
Battery	Type designation	YTX9-BS		
	Capacity	12 V 28.8 kC (8 Ah)/10 HR		
	Standard electrolyte S.G.	1.320 at 20 °C (68 °F)		
Fuse size	Main	30 A		
	Headlight (H)	10 A		
	Headlight (L)	10 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
		E-03, 24, 28, 33
Headlight	HI	60
	LO	55
Parking or position light		
Brake light/Taillight		21/5
Turn signal light		21
Speedometer light		1.7
Turn signal indicator light		2
High beam indicator light		2
Neutral indicator light		2
License light		5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal height	5 (0.2)		—
Brake disc thickness	Front	4.0 ± 0.2 (0.157 ± 0.008)	3.5 (0.14)
	Rear	4.5 ± 0.2 (0.177 ± 0.008)	4.0 (0.16)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
	Rear	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4994)	—
	Rear	12.657 – 12.684 (0.4983 – 0.4994)	—
Brake caliper cylinder bore	Front	27.000 – 27.050 (1.0630 – 1.0650)	—
	Rear	30.23 – 30.28 (1.1902 – 1.1921)	—
Brake caliper piston diam.	Front	26.90 – 26.95 (1.0591 – 1.0610)	—
	Rear	30.16 – 30.18 (1.1874 – 1.1882)	—
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)

ITEM	STANDARD		LIMIT
Tire rim size	Front	21 × 1.85	—
	Rear	17M/C × MT2.50	—
Tire size	Front	90/90-21M/C 54S	—
	Rear	120/90-17M/C 64S	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	260 (10.2)	—	
	220 (8.7)	—	Low seat
Front fork spring free length	—	548 (21.6)	
Front fork oil level	164 (6.5)	—	
	150 (5.9)	—	Low seat
Rear shock absorber spring pre-set length	247.5 (9.74)	—	
Rear wheel travel	260 (10.2)	—	
	220 (8.7)	—	Low seat
Swingarm pivot shaft runout	—	0.3 (0.01)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm ²	psi	kPa	kgf/cm ²	psi
FRONT	150	1.50	22	175	1.75	25
REAR	175	1.75	25	200	2.00	29

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane (R/2 + M/2) or 91 octane or higher rated by the reserch method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-03, 28, 33
	Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.		E-24
Fuel tank capacity	Including reserve	12 L (3.2/2.6 US/Imp gal)	E-33
		13 L (3.4/2.9 US/Imp gal)	Others
	Only reserve	3.0 L (0.8/0.7 US/Imp gal)	
Engine oil type	SAE 10W-40, API SF/SG or SH/SJ with JASO MA		
Engine oil capacity	Oil change	2 300 ml (2.4/2.0 US/Imp qt)	
	Oil and filter change	2 400 ml (2.5/2.1 US/Imp qt)	
	Engine overhaul	2 600 ml (2.7/2.3 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	565 ml (19.1/19.9 US/Imp oz)		
	563 ml (19.0/19.8 US/Imp oz)		Low seat
Brake fluid type	DOT 4		

TIGHTENING TORQUE

ENGINE

ITEM	N·m	kgf-m	lbf-ft
Cylinder head cover bolt	10	1.0	7.0
Camshaft sprocket bolt	15	1.5	11.0
Cylinder head bolt	38	3.8	27.5
Cylinder head nut	25	2.5	18.0
Cylinder base nut	10	1.0	7.0
Cam drive chain tensioner fitting bolt	13	1.3	9.5
Generator rotor bolt	160	16.0	115.5
Cam drive chain adjuster mounting bolt	10	1.0	7.0
Spark plug	11	1.1	8.0
Crankcase bolt	11	1.1	8.0
T.D.C. plug	23	2.3	16.5
Oil gallery	23	2.3	16.5
Oil nozzle bolt	10	1.0	7.0
Generator cover plug	15	1.5	11.0
Starter clutch bolt	25	2.5	18.0
Primary drive gear nut	100	10.0	72.5
Clutch spring mounting bolt	10	1.0	7.0
Clutch sleeve hub nut	50	5.0	36.0
Gearshift arm stopper	19	1.9	13.5
Engine oil drain plug	23	2.3	16.5
Engine sprocket bolt	6	0.6	4.5
Engine mounting bolt 8 mm Diam.	40	4.0	29.0
Engine mounting bolt 10 mm Diam.	65	6.5	47.0
Engine mounting bracket bolt (Upper and Front)	40	4.0	29.0
(Rear)	23	2.3	16.5
Exhaust pipe bolt	26	2.6	19.0
Muffler mounting bolt	26	2.6	19.0
Crankshaft bearing ring nut	80	8.0	58.0
Engine oil pipe union bolt (Cylinder head)	23	2.3	16.5
(Crankcase)	20	2.0	14.5
Engine oil cooler hose bolt	10	1.0	7.0
Cam drive chain adjuster cap bolt	6	0.6	4.5

CHASSIS

ITEM	N·m	kgf-m	lbf-ft
Front axle	65	6.5	47.0
Front axle holder nut	10	1.0	7.0
Front fork damper rod bolt	30	3.0	21.5
Front fork lower clamp bolt	26	2.6	19.0
Front fork upper clamp bolt	29	2.9	21.0
Front fork cap bolt	23	2.3	16.5
Steering stem head nut	90	9.0	65.0
Handlebar clamp bolt	23	2.3	16.5
Handlebar holder nut	25	2.5	18.0
Front brake master cylinder mounting bolt	10	1.0	7.0
Front brake caliper mounting bolt	26	2.6	19.0
Brake caliper axle bolt (Front & Rear)	23	2.3	16.5
	13	1.3	9.5
Brake hose union bolt (Front & Rear)	23	2.3	16.5
Brake pad mounting pin (Front & Rear)	18	1.8	13.0
Front brake pad mounting pin plug	2.5	0.25	1.8
Brake air bleeder valve (Front & Rear)	8	0.8	6.0
Brake disc mounting bolt (Front & Rear)	23	2.3	16.5
Swingarm pivot nut	77	7.7	55.5
Front footrest bolt	39	3.9	28.0
Chain roller mounting bolt (Upper & lower)	40	4.0	29.0
Rear brake master cylinder mounting bolt	10	1.0	7.0
Rear brake rod lock-nut	18	1.8	13.0
Rear shock absorber bolt (Upper & lower)	55	5.5	40.0
Rear cushion lever nut	(Front)	80	8.0
	(Center)	100	10.0
Rear cushion rod nut	100	10.0	72.5
Rear axle nut	For Canada and U.S.A.	100	10.0
	For the others	110	11.0
Rear sprocket mounting nut	27	2.7	19.5
Spoke nipple (Front & Rear)	4.5	0.45	3.0