



Motorcycle  
2012 Model: DR-Z400SL2  
Date: March 2011



### Key Features

1. 398cm<sup>3</sup>, 4-stroke, DOHC engine produces broad, tractable power and torque.
2. The engine features compact, streamlined design for the double advantage of low engine positioning and extra-slim, rider-friendly chassis.
3. Suzuki Composite Electrochemical Materials (SCEM) cylinder plating for durability, weight reduction and superior heat transfer.
4. Large 36mm MIKUNI carburetor for seamless and smooth engine power delivery.
5. Dry-sump lubrication system makes the crankcase compact.
6. Magnesium-alloy clutch, magneto and cam covers contribute to weight reduction.
7. Digitally mapped DC-CDI system monitors throttle position/engine rpm and adjusts ignition timing to maintain efficient combustion.

8. Rider-friendly electric engine starter with a lightweight electric starter motor and a compact, maintenance-free battery.
9. Automatic decompression system lifts one exhaust valve at cranking rpm for easy starting.
10. Long-travel front forks with protective rubber boots. Adjustable spring preload and compression/rebound damping allow precise settings.
11. Progressive-linkage rear shock absorber, aluminum swingarm and adjustable spring preload/compression damping.
12. Narrow frame combines thin chrome-moly steel tubes for exceptional torsional rigidity with minimum weight, and lightweight aluminum bolt-on rear subframe.
13. Digital instrument includes speedometer, odometer, dual tripmeters with addition/subtraction functions, clock and stopwatch.
14. Bright 60/55W H4 halogen headlight, lightweight turn signals and compact taillight/brake light.
15. Efficient 250mm (9.8-inch) front disc brake with dual-piston caliper and a 220mm (8.7-inch) rear disc brake with a single-piston caliper.



**SPECIFICATIONS****MODEL: DR-Z400SL2****DIMENSIONS AND CURB MASS**

Overall length.....	2310 mm (90.9 in)
Overall width .....	875 mm (34.4 in)
Overall height.....	1230 mm (48.4 in)
Wheelbase.....	1485 mm (58.5 in)
Ground clearance.....	300 mm (11.8 in)
Seat height.....	935 mm (36.8 in)
Curb mass.....	144 kg (317 lbs).....E-03, 33

**ENGINE**

Type.....	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 cm <sup>3</sup> (24.3 cu. in)
Compression ratio.....	11.3 : 1
Carburetor.....	MIKUNI BSR36, single
Air cleaner.....	Polyurethane foam element
Starter system.....	Electric
Lubrication system.....	Dry 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.....	2.960 (74/25)
Gear ratios, Low .....	2.285 (32/14)
2nd.....	1.733 (26/15)
3rd.....	1.375 (22/16)
4th.....	1.090 (24/22)
Top.....	0.863 (19/22)
Final reduction ratio.....	2.733 (41/15)
Drive chain.....	RK520KZO, 112 links

**CHASSIS**

Front suspension.....	Telescopic, coil spring, oil damped
Rear suspension.....	Link type, coil spring, oil damped
Front suspension.....	288 mm (11.3 in)
Rear wheel travel.....	295 mm (11.6 in)
Caster.....	27° 10'
Trail.....	107 mm (4.21 in)
Steering angle.....	38° (right & left)
Turning radius.....	2.2 m (7.2 ft)
Front brake.....	Disc brake
Rear brake.....	Disc brake
Front tire size.....	80/100-21M/C 51P, tube type
Rear tire size.....	120/90-18M/C 65P, tube type

**ELECTRICAL**

Ignition type.....	Electronic ignition (CDI)
Ignition timing.....	7° B.T.D.C. at 1500 r/min
Spark plug.....	NGK CR8E or DENSO U24ESR-N
Generator.....	Three-phase A.C. generator
Battery.....	12V 21.6 kC (6 Ah) /10 HR
Fuse.....	20A
Headlight.....	12V 60/55W
Turn signal light.....	12V 21W x 4
Brake/Tail light.....	12V 21/5W
Speedometer light.....	LED
Neutral indicator light.....	LED
High beam indicator light.....	LED
Turn signal indicator light.....	LED
Water temperature indicator light.....	LED

**CAPACITIES**

Fuel tank, including reserve.....	9.5L (2.5/2.1 US/Imp gal) E-33
	10.0L (2.6/2.2 US/Imp gal) Others
Reserve.....	2.3 L (0.6/0.5 US/Imp gal)
Engine oil, oil change.....	1700 ml (1.8/1.5 US/Imp qt)
With filter change .....	1800 ml (1.9/1.6 US/Imp qt)
Overhaul.....	1900 ml (2.0/1.7 US/Imp qt)
Coolant.....	1.3 L (1.4/1.1 US/Imp qt)

## SERVICE DATA

### VALVE + VALVE GUIDE

Unit: mm (in)

ITEM		STANDARD	LIMIT
Valve diam.	IN.	36.0 (1.42)	—
	EX.	29.0 (1.14)	—
Tappet clearance (when cold)	IN.	0.10 – 0.20 (0.0039 – 0.0079)	—
	EX.	0.20 – 0.30 (0.0079 – 0.0118)	—
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 guide I.D.	IN. & EX.	5.000 – 5.012 (0.1969 – 0.1973)	—
Valve stem O.D.	IN.	4.975 – 4.990 (0.1959 – 0.1965)	—
	EX.	4.955 – 4.970 (0.1951 – 0.1957)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
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	—	32.6 (1.28)
	Outer	—	36.3 (1.43)
Valve spring tension (IN. & EX.)	Inner	56 – 64 N (5.6 – 6.4 kgf, 12.3 – 14.1 lbf) at length 27.4 mm (1.08 in)	—
	Outer	126 – 145 N (12.6 – 14.5 kgf, 27.7 – 32.0 lbf) at length 30.9 mm (1.22 in)	—

**CAMSHAFT + CYLINDER HEAD**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	36.490 – 36.540 (1.4366 – 1.4386)	36.190 (1.4248)
	EX.	35.790 – 35.840 (1.4091 – 1.4110)	35.490 (1.3972)
Camshaft journal oil clearance	IN. & EX.	0.019 – 0.053 (0.0007 – 0.0021)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.972 – 21.993 (0.8653 – 0.8659)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Cam chain pin (at arrow "3")	15th pin		—
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
Compression pressure (Automatic de-comp. actuated)	950 kPa (9.5 kgf/cm <sup>2</sup> , 135 psi)		—
Piston to cylinder clearance	0.030 – 0.040 (0.0012 – 0.0016)		0.120 (0.0047)
Cylinder bore	90.000 – 90.015 (3.5433 – 3.5439)		Nicks or scratches
Piston diam.	89.965 – 89.980 (3.5419 – 3.5425) Measure at 15 mm (0.6 in) from the skirt end.		89.880 (3.5386)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 6.9 (0.27)
	2nd	R	Approx. 11.5 (0.45)
Piston ring end gap	1st & 2nd		0.08 – 0.20 (0.003 – 0.008)
Piston ring to groove clearance	1st	—	
	2nd	—	
Piston ring groove width	1st	0.78 – 0.80 (0.0307 – 0.0315)	
		1.30 – 1.32 (0.0512 – 0.0520)	
	2nd	0.81 – 0.83 (0.0319 – 0.0327)	
	Oil	2.01 – 2.03 (0.0791 – 0.0799)	

ITEM	STANDARD		LIMIT
Piston ring thickness	1st	0.71 – 0.76 (0.0280 – 0.0299)	—
		1.08 – 1.10 (0.0425 – 0.0433)	—
	2nd	0.77 – 0.79 (0.0303 – 0.0311)	—
Piston pin bore	20.002 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.995 – 20.000 (0.7872 – 0.7874)		19.980 (0.7866)

### CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.30 – 0.65 (0.012 – 0.026)	1.0 (0.04)
Conrod big end width	21.95 – 22.00 (0.864 – 0.866)	—
Crank web to web width	61.9 – 62.1 (2.437 – 2.445)	—
Crankshaft runout	—	0.08 (0.003)

### OIL PUMP

ITEM	STANDARD	LIMIT
Oil pressure reduction ratio	2.220 (74/25 × 20/16 × 12/20)	—
Oil pressure (at 60 °C, 140 °F)	Above 40 kPa (0.4 kgf/cm <sup>2</sup> , 5.7 psi) Below 140 kPa (1.4 kgf/cm <sup>2</sup> , 19.9 psi) at 3 000 r/min	—

### CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch cable play	10 – 15 (0.4 – 0.6)	—
Drive plate thickness (No. 1 & No. 2)	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
Drive plate claw width (No. 1 & No. 2)	13.7 – 13.8 (0.539 – 0.543)	13.2 (0.520)
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	49.9 (1.96)

## TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		2.960 (74/25)		—
Final reduction ratio		2.933 (44/15)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.733 (26/15)		—
	3rd	1.375 (22/16)		—
	4th	1.090 (24/22)		—
	Top	0.863 (19/22)		—
Shift fork to groove clearance		0.1 – 0.3 (0.004 – 0.012)		0.5 (0.020)
Shift fork groove width		No. 1, No. 2 & No. 3	4.8 – 4.9 (0.189 – 0.193)	—
Shift fork thickness		No. 1, No. 2 & No. 3	4.6 – 4.7 (0.181 – 0.185)	—
Drive chain	Type	RK520KZO		—
	Links	112		—
	20-pitch length	—		319.4 (12.57)
Drive chain slack		40 – 50 (1.6 – 2.0)		—

## CARBURETOR

ITEM	SPECIFICATION		
	E-24	E-03, 28	E-33
Carburetor type	MIKUNI BSR36	←	←
Bore size	36 mm (1.4 in)	←	←
I.D. No.	29FA	29FB	29FC
Idle r/min	1 500 ± 100 r/min	←	←
Float height	16.3 ± 1.0 mm (0.64 ± 0.04 in)	14.0 ± 1.0 mm (0.55 ± 0.04 in)	←
Main jet (M.J.)	#142.5	<del>#142.5</del>	←
Jet needle (J.N.)	5DH36-2nd	5DH37	←
Needle jet (N.J.)	P-0M	<del>P-0M</del>	←
Pilot jet (P.J.)	#22.5	<del>#22.5</del>	←
Pilot air jet (P.A.J.)	#165	#135	←
Throttle valve (Th.V.)	#105	←	←
Pilot screw (P.S.)	3 turns counterclockwise from screwed in lightly to the stop	PRE-SET	←
Throttle cable play (pulling cable)	2 – 4 mm (0.08 – 0.16 in)	←	←



## THERMOSTAT + RADIATOR + FAN + COOLANT

ITEM	STANDARD		LIMIT
Thermostat valve opening temperature	Approx. 75 °C (167 °F)		—
Thermostat valve lift	Over 6 mm (0.24 in) at 90 °C (194 °F)		—
Engine coolant temp. switch operating temperature	OFF→ON	Approx. 117 °C (243 °F)	—
	ON→OFF	Approx. 100 °C (212 °F)	—
Radiator cap valve opening pressure	95 – 125 kPa (0.95 – 1.25 kgf/cm <sup>2</sup> , 13.5 – 17.8 psi)		—
Electric fan thermo-switch operating temperature	OFF→ON	Approx 96 °C (205 °F)	—
	ON→OFF	Approx 91 °C (196 °F)	
Engine coolant type	Use an anti-freeze/coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50:50.		—
Engine coolant capacity	1 250 ml (1.3/1.1 US/Imp qt)		—

## BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever play	0.1 – 0.3 (0.004 – 0.010)		—
Rear brake pedal height	5 (0.2)		—
Brake disc thickness	Front	3.3 – 3.7 (0.130 – 0.146)	3.0 (0.118)
	Rear	4.3 – 4.7 (0.169 – 0.185)	4.0 (0.16)
Brake disc runout	Front & Rear	—	0.30 (0.012)
Master cylinder bore	Front & Rear	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front & Rear	12.657 – 12.684 (0.4983 – 0.4994)	—
Brake caliper cylinder bore	Front & Rear	27.000 – 27.050 (1.0630 – 1.0650)	—
Brake caliper piston diam.	Front & Rear	26.900 – 26.950 (1.0591 – 1.0610)	—
Brake fluid type	DOT 4		—
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)
Wheel rim size	Front	1.60 × 21	—
	Rear	2.15 × 18	—

## TIRE

ITEM	STANDARD		LIMIT
Cold inflation tire pressure (Solo riding)	Front	125 kPa (1.25 kgf/cm <sup>2</sup> , 18 psi)	—
	Rear	150 kPa (1.50 kgf/cm <sup>2</sup> , 22 psi)	—
Cold inflation tire pressure (Dual riding)	Front	125 kPa (1.25 kgf/cm <sup>2</sup> , 18 psi)	—
	Rear	175 kPa (1.75 kgf/cm <sup>2</sup> , 25 psi)	—
Tire size	Front	80/100-21 M/C 51P	—
	Rear	120/90-18 M/C 65P	—
Tire type	Front	BRIDGESTONE TRAIL WING-41	
	Rear	BRIDGESTONE TRAIL WING-42	
Tire tread depth	Front	—	3.0 mm (0.12 in)
	Rear	—	3.0 mm (0.12 in)

## SUSPENSION

Unit: mm (in)

ITEM	STANDARD		LIMIT	
Front fork stroke	288 (11.3)		—	
Front fork spring free length	510.6 (20.10)		500.3 (19.7)	
Front fork oil level (without spring)	129 (5.07)		—	
Front fork oil type	SUZUKI FORK OIL SS-05 or equivalent		—	
Front fork oil capacity (each leg)	710 ml (24.0/25.0 US/Imp oz)		—	
Front fork damping force adjuster	Rebound	16 clicks counterclockwise from stiffest position	—	
	Compression	13 clicks counterclockwise from stiffest position	—	
Rear shock absorber gas pressure	900 kPa (9.0 kgf/cm <sup>2</sup> , 128 psi)		—	
Rear shock absorber spring pre-set length	Rebound	13 clicks counterclockwise from stiffest position	—	
	Compression	High speed	1¼ turns counterclockwise from stiffest position	—
		Low speed	10 clicks counterclockwise from stiffest position	—
Rear wheel travel	295 (11.6)		—	
Swingarm pivot shaft runout	—		0.3 (0.01)	

**ELECTRICAL**

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Spark plug	Type	DENSO: U24ESR-N NGK: CR8E		
	Gap	0.7 – 0.8 (0.028 – 0.031)		
Spark performance		Over 8 mm (0.3 in) at 1 atm.		
Ignition coil resistance	Primary	0.1 – 1.0 $\Omega$		Terminal – Ground
	Secondary	12 – 20 k $\Omega$		Plug cap – Terminal
Ignition coil primary peak voltage		More than 150 V		⊕: B/W, ⊖: B/Y
Generator coil resistance	Charging	0.50 – 1.25 $\Omega$		Y – Y
	Signal coil	0.05 – 0.20 $\Omega$		B – W
	Pick-up coil	390 – 600 $\Omega$		G – Bl
Pick-up coil peak voltage		More than 5.0 V		⊕: Bl, ⊖: G
Signal coil peak voltage		More than 1.4 V		⊕: B, ⊖: W
Generator no-load voltage (When engine is cold)		More than 75 V (AC) at 5 000 r/min		
Regulated voltage		13.5 – 15.0 V at 5 000 r/min		
Generator max. output		200 W at 5 000 r/min		
Starter relay resistance		3 – 5 $\Omega$		
Battery	Type designation	YT7B-BS		
	Capacity	12 V 21.6 kC (6Ah)/10 HR		
Fuse size		20 A		

**WATTAGE**

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Brake/Tail light		21/5
Turn signal light		21
Speedometer light		LED
Neutral indicator light		LED
Turn signal indicator light		LED
High beam indicator light		LED
Water temp. indicator light		LED

## 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 research 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 (Research Method) or higher. Unleaded gasoline is recommended.	E-24
Fuel tank capacity	Including reserve	9.5 L (2.5/2.1 US/Imp gal)	E-33
		10.0 L (2.6/2.2 US/Imp gal)	The Others
	Reserve	2.3 L (0.6/0.5 US/Imp qt)	
Engine oil type		SAE 10 W-40, API SF/SG or SH/SJ, or with JASO MA	
Engine oil capacity		Change	1 700 ml (1.8/1.5 US/Imp qt)
		Filter change	1 800 ml (1.9/1.6 US/Imp qt)
		Overhaul	1 700 ml (2.0/1.7 US/Imp qt)

# TIGHTENING TORQUE

## ENGINE

ITEM		N-m	kgf-m	lbf-ft
Cylinder head cover bolt		10→14	1.0→1.4	7.0→10.0
Spark plug		11	1.1	8.0
Cylinder head bolt	M10	25→46	2.5→4.6	18.0→33.5
	M6	10	1.0	7.0
Cylinder nut		10	1.0	7.0
Camshaft journal holder bolt		10	1.0	7.0
Balancer shaft nut		50	5.0	36.0
Primary drive gear nut		140	14.0	101.5
Generator rotor nut		100	10.0	72.5
Clutch sleeve hub nut		70	7.0	50.5
Gearshift arm stopper		19	1.9	13.5
Gearshift cam driven gear bolt		24	2.4	17.5
Cam chain tension adjuster bolt		10	1.0	7.0
Cam chain tensioner mounting bolt		10	1.0	7.0
Cam chain tensioner spring holder bolt		30	3.0	21.5
Engine oil drain plug (on the crankcase)		21	2.1	15.0
Engine oil drain plug (on the frame)		18	1.8	13.0
Crankcase bolt		11	1.1	8.0
Oil strainer (on the frame)		23	2.3	16.5
Oil hose union bolt		23	2.3	16.5
Radiator air bleeder bolt		6	0.6	4.5
TDC plug		23	2.3	16.5
Engine mounting nut		66	6.6	47.5
Engine mounting bracket nut		40	4.0	29.0
Exhaust pipe bolt and nut		23	2.3	16.5
Muffler connection bolt		20	2.0	14.5
Muffler mounting bolt		23	2.3	16.5
Engine sprocket nut		145	14.5	105.0
Intake pipe union		8	0.8	6.0
Fuel valve mounting bolt		4.4	0.44	3.2
Spark arrester/muffler end pipe bolt		11	1.1	8.0
Engine coolant temperature thermostwitch		13	1.3	9.5
Cooling fan thermostwitch		13	1.3	9.5

## CHASSIS

ITEM		N-m	kgf-m	lbf-ft
Handlebar clamp bolt		23	2.3	16.5
Front fork upper clamp bolt		30	3.0	21.5
Front fork lower clamp bolt		32	3.2	23.0
Steering stem nut		45 N·m (4.5 kgf-m, 32.5 lbf-ft) → 1/4 – 1/2 turn counterclockwise		
Steering stem head nut		90	9.0	65.0
Front fork cap bolt		23	2.3	16.5
Front fork damper rod bolt		80	8.0	58.0
Front brake master cylinder mounting bolt		10	1.0	7.0
Rear brake master cylinder mounting bolt		10	1.0	7.0
Brake hose union bolt (front & rear)		23	2.3	16.5
Front brake caliper mounting bolt		26	2.6	19.0
Brake pad mounting pin (front & rear)		18	1.8	13.0
Brake caliper plug (front & rear)		2.5	0.25	1.8
Brake air bleeder valve (front & rear)		7.5	0.75	5.5
Rear brake rod lock-nut		18	1.8	13.0
Rear brake pedal bolt		29	2.9	21.0
Brake disc mounting bolt (front & rear)		10	1.0	7.0
Front axle nut		42	4.2	30.5
Front axle pinch bolt		18	1.8	13.0
Seat rail mounting nut (upper)		35	3.5	25.5
Seat rail mounting bolt (lower)		35	3.5	25.5
Rear axle nut	E-03, 28, 33	100	10.0	72.5
	E-24	110	11.0	79.5
Rear sprocket nut		30	3.0	21.5
Drive chain roller mounting bolt (upper & lower)		40	4.0	29.0
Spoke nipple (front & rear)		3	0.3	2.0
Swingarm pivot nut		77	7.7	55.5
Rear shock absorber spring adjuster lock ring		90	9.0	65.5
Rear shock absorber mounting nut (upper & lower)		55	5.5	40.0
Cushion lever mounting nut (center)		100	10.0	72.5
Cushion lever mounting nut (front)		100	10.0	72.5
Cushion lever mounting nut		100	10.0	72.5
Side stand bolt		50	5.0	36.0
Side stand nut		55	5.5	40.0