BULLET ELECTRA - EFI

BULLET ELECTRA EFI

ENGINE SPECIFICATIONS

DETAILS	MAKE:	ROYAL ENFIELD
	MODEL:	UCE-500 E.F.I
ENGINE:		
Type		4 Stroke
Bore Dia. (mm)		84
Stroke Length (mm)		90
Eng. Displacement (CC)		499
Comp. Ratio		8.5:1
Engine cooling		Natural Air Draft
Engine Alignment		Vertical
Valve train		OHV, PUSH ROD actuated
No. of valves/cyl.		2
No. of cylinders		1
Idle speed (rpm)		1000±100
Ign. Timing (Deg. BTDC)		5º Static
Engine Lubricating oil grade		15W50 API SL Grade
Engine oil quantity (Liters)		2.75
Spark plug Grade		BOSCH SUPER WR3CC
Spark plug Electrode air gap (mm)		0.7

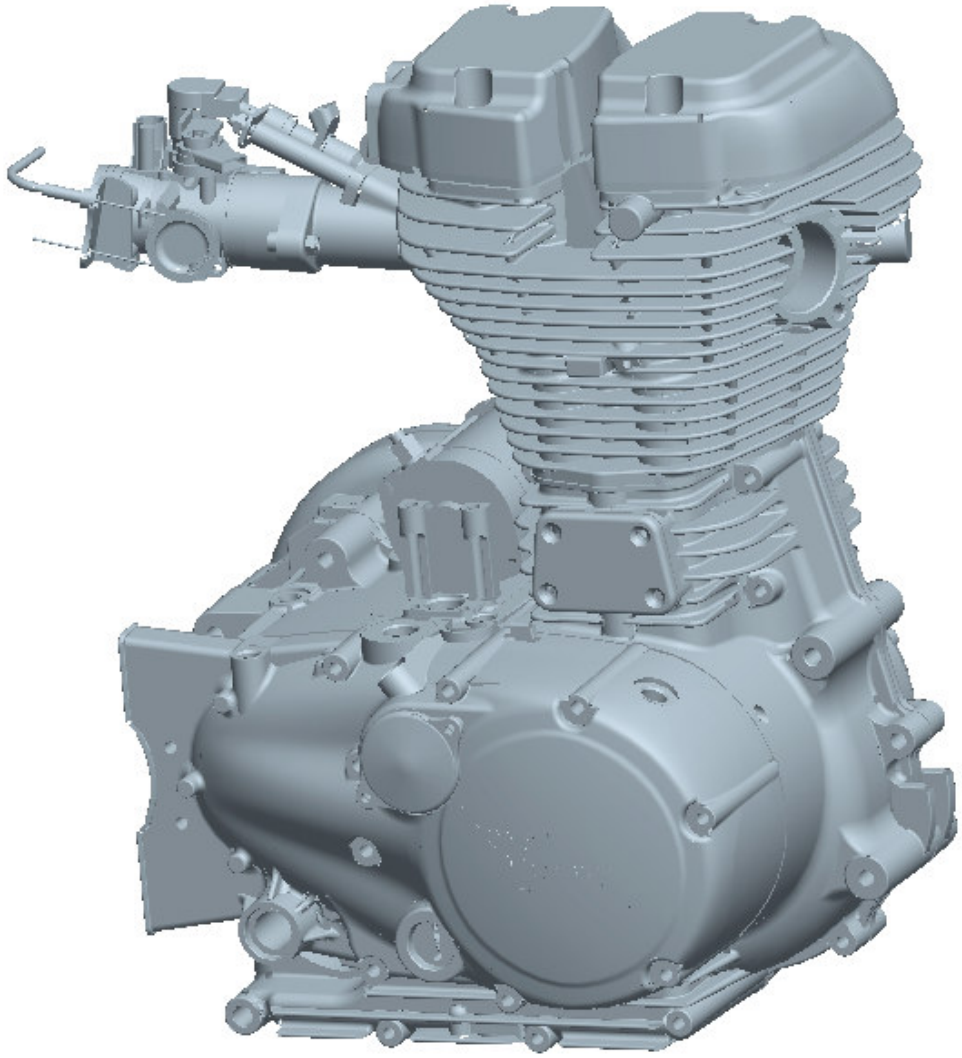
CHASIS SPECIFICATIONS

CHASSIS:		
TYPE		Tubular frame, Engine as stressed member
Tyre size (W X DIA)"	Front	90/90
	Rear	100/90
Tyre Air pressure (Psi)	Front- Solo	18
	Front- With Pillion	20
	Rear- Solo	28
	Rear- With Pillion	30
VEHICLE:		MOTOR CYCLE- CRUISER
Fuel tank capacity (Liters)		14.5 ± 1.0
Kerb Wt (kgs)		180
Gross Wt (kgs)		365
Length (mm)		2200
Width (mm)		790
Height (mm)		1100
Wheel base (mm)		1370
Saddle height (mm)		820
Ground clearance (mm)		140

ELECTRICAL SPECIFICATIONS

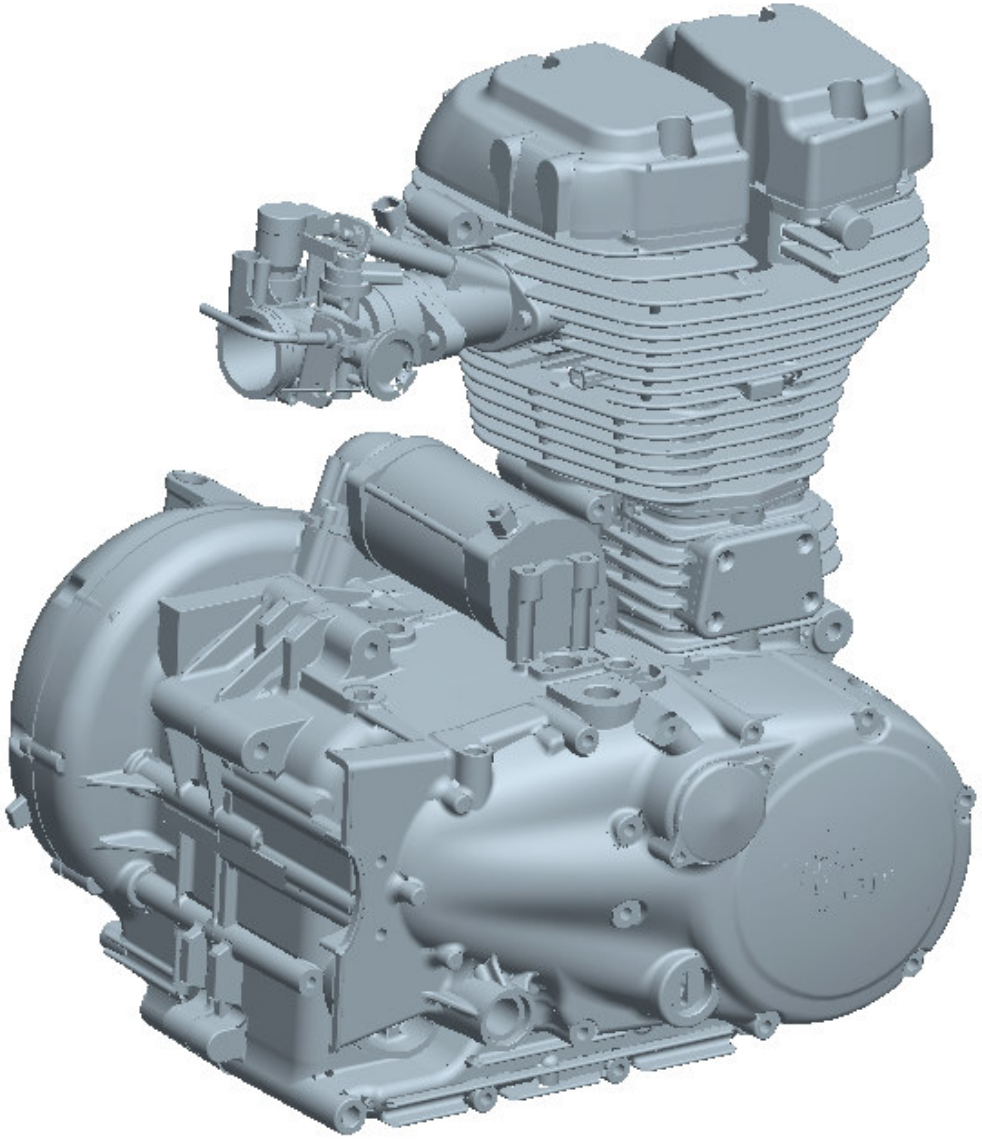
ELECTRICAL SYSTEM:		
System spec.		12V, DC
Batter capacity		12V, 14AH
Head Lamp		12V, 60/55 W
Tail / Brake lamp		12V, 5/21 W
Pilot lamp		12V, 2 W- 3 nos.
Speedometer lamp		12V, 3.4W- 1 no.
Turn signal		12V, 2 W- 1 no.
High beam indicator		12V, 2 W- 1 no.
Turn signal		12V, 10 W- 2+2 nos.
Neutral Indicator		12V, 2 W- 1no.
Horn		12V, 2.5 Amp (Max.)
Starter Motor		0.9 KW
Mal-function Indicator (M.I.L)		3.4 W
Low fuel Indicator		1.7 W
Alternator capacity		220 Watts at 5000 rpm
FUSE ratting	For Battery	15 A
	RR unit	15 A
	ECU	15 A

UNIT CONSTRUCTION ENGINE – 500 cc - EFI

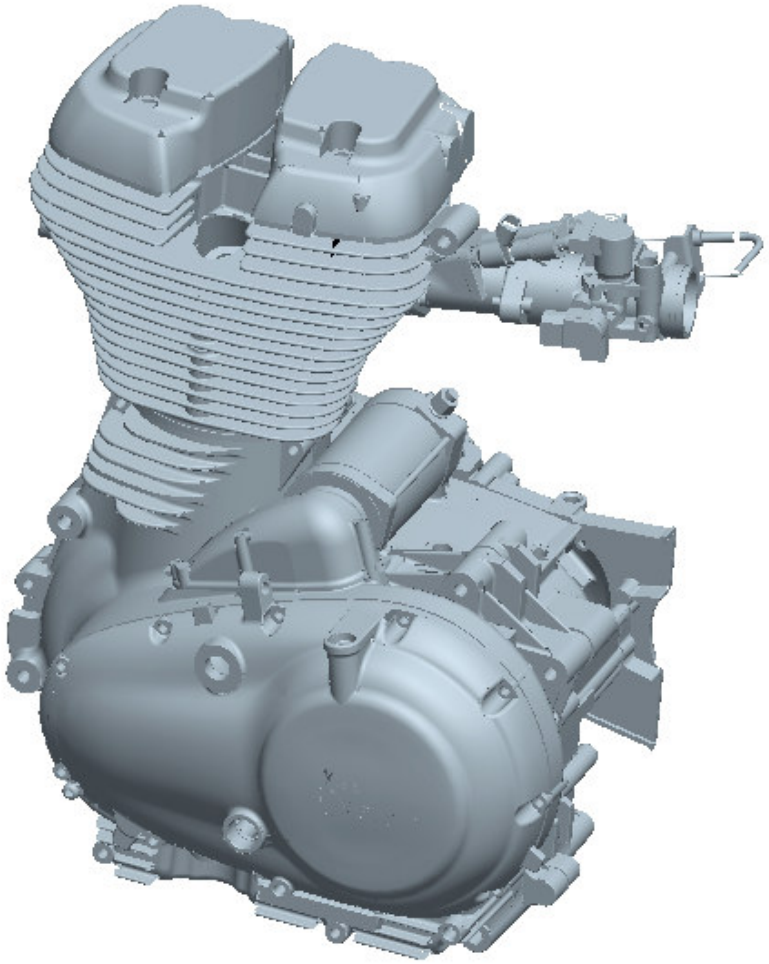


View I

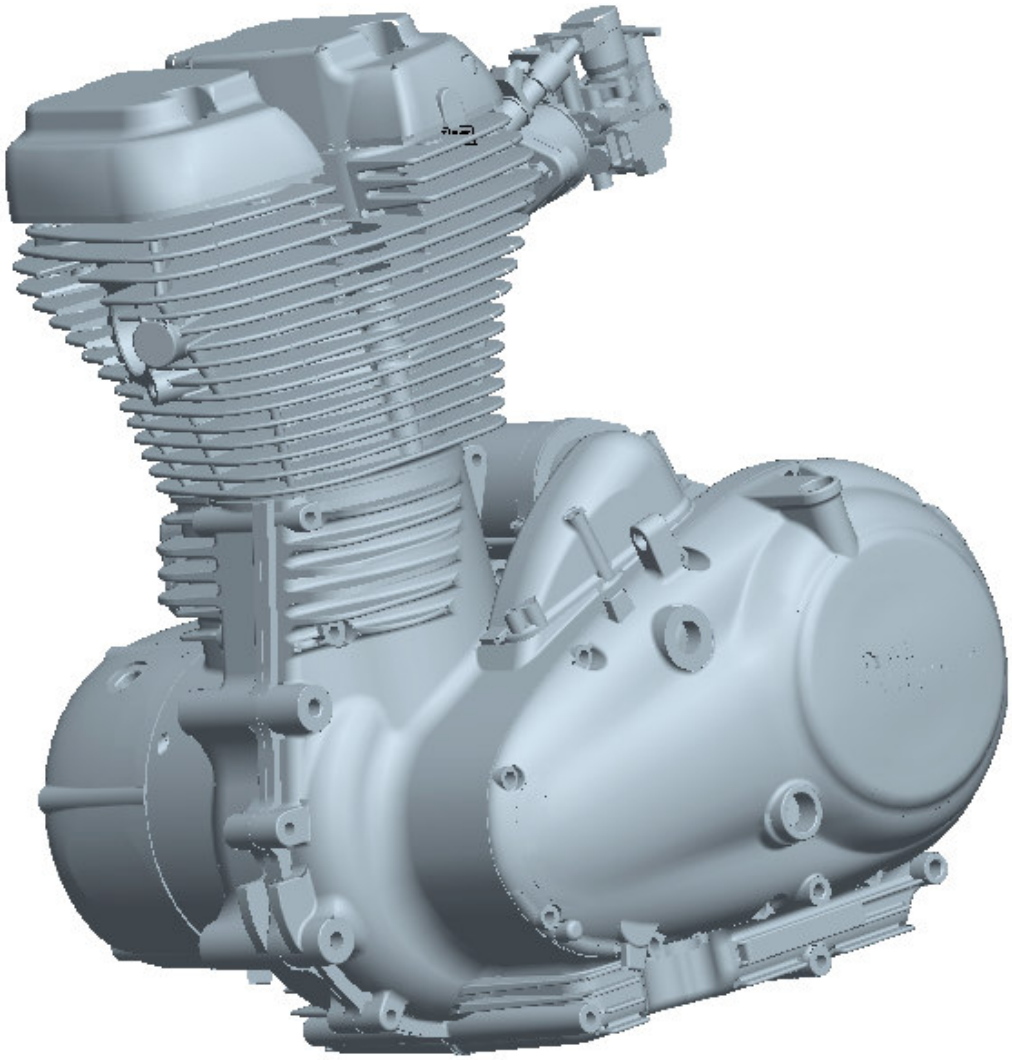
ROYAL ENFIELD



View II



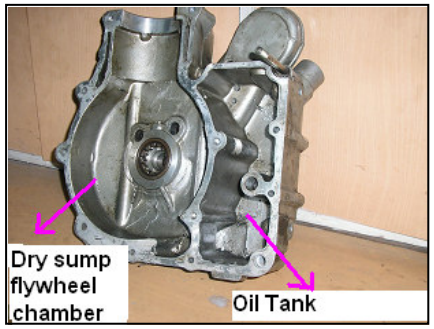
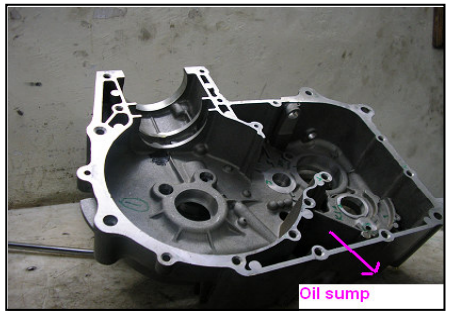
View III

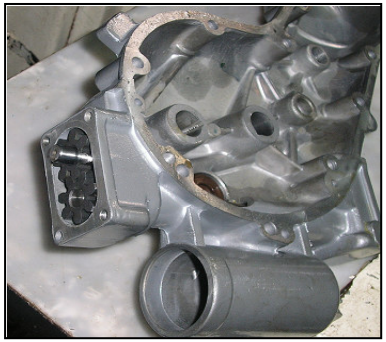
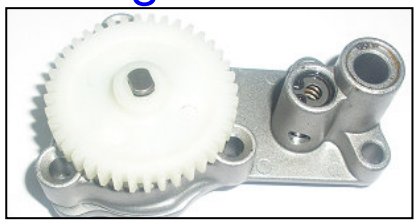


View IV

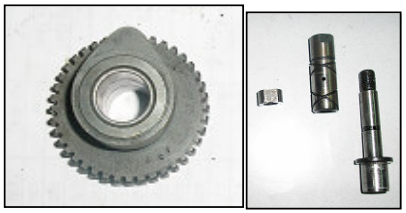
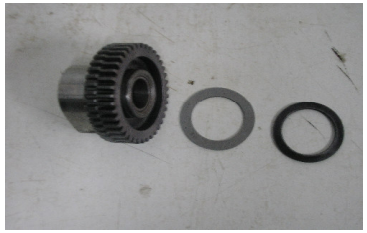
ARCHITECTURE UCE 500 EFI ENGINE

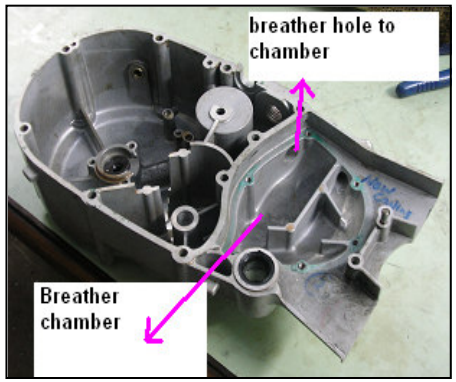
(AS COMPARED TO EXISTING LB 500)

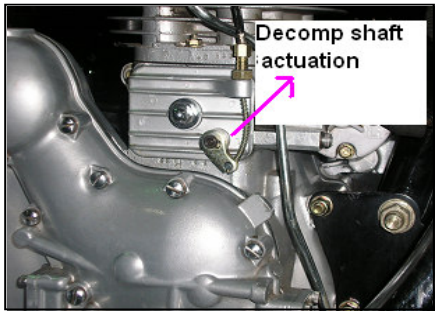
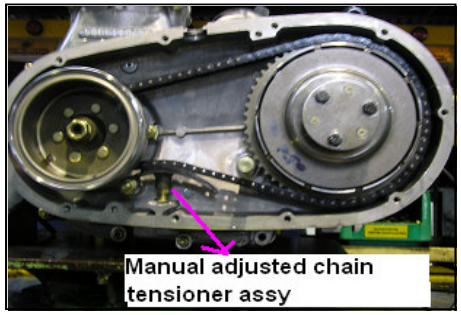
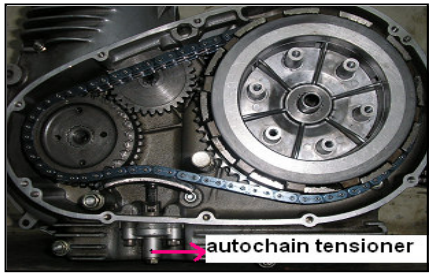
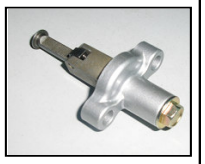
#	DESCRIPTION	LB 500 cc ENGINE	UCE 500 cc ENGINE
1	Configuration	Engine, gear box and clutch are separate compartment.	Engine, gear box and clutch are being made as integral construction.
2	Oil Sump system	Dry sump lubrication system 	**Wet sump lubrication** system 

3	Oil pump Design	Gear pump design. Oil flow rate is 2.42 L/mt @ 5500 engine rpm. 	**Gerotor - rotary type** oil pump. Flow rate : 9.5 L/ mt @ 5500 engine rpm. It provides better oil flow and cooling to the engine. 
4	Combustion chamber and port design	Wedge type combustion chamber with high turbulence. 	Wedge type combustion chamber with high turbulence. 

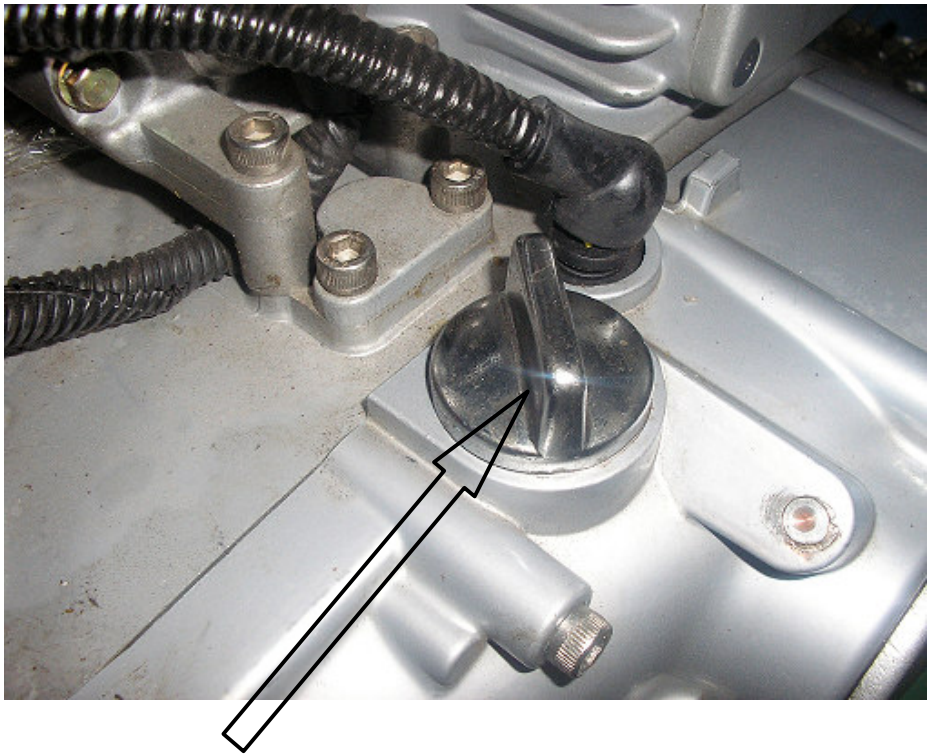
5	Piston design	Solid skirt piston with flat crown made up of high silicon alum Alloy. 	Solid skirt piston with bowled crown made up of high silicon alum Alloy for better combustion 
6	Cylinder barrel	Cylinder barrel is made up of Aluminium with cast iron liner 	Cylinder barrel is made up of Aluminium with cast iron liner 
7	Piston ring pack	Modular, robust, thick piston ring pack to control oil consumption 	Modular, Flexible thin piston ring pack to reduce friction and blow by thereby better performance 

8	Tappet	The tappet is sursulf coated after heat treatment. 	Hydraulic tappet is used. It helps to maintain zero clearance of pushrod at all engine operating conditions enabling uniform valve timing 
9	cam gear - inlet	Cam gear gets assembled in eccentric sleeve with spindle assy. It is to adjust the centre distance and hence backlash gets adjusted. 	**Anti back lash gear system** is used to arrest the back lash between inlet and exhaust cam gears. 

10	Engine breathing system	Higher engine crankcase pressure and hence separate breather box is provided to collect the breather oil	Lesser crankcase breather pressure due to integration of engine with gear box and clutch compartment. Oil deflector arrangement has been provided inside the engine cover to prevent oil mist coming out. 

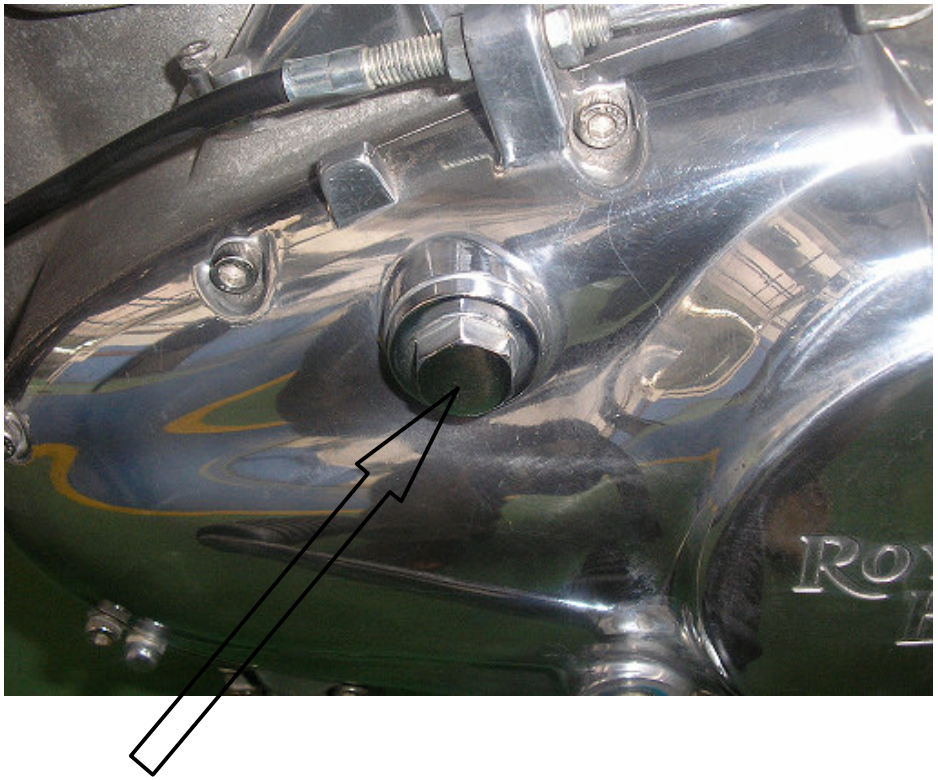
11	Decompressor design	Actuated through valve train leads to mechanical losses and hence inferior functioning 	Auto decompressor design activate at 250 rpm and will get fully deactivated at 350 rpm 
12	Primary chain adjuster	Mechanical type chain tensioner is used to adjust the primary chain. 	Auto chain tensioner (Rack type) is used  

OIL POURING ON ENGINE



OIL FILLER CAP ON RH COVER

QTY OF OIL : 2.55 L

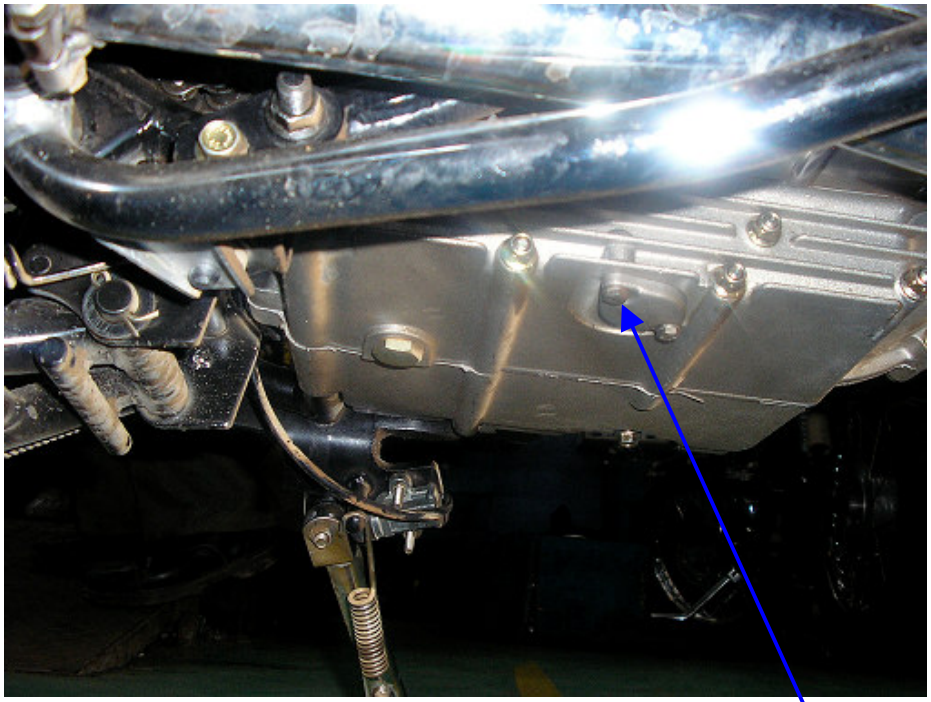


OIL FILLER CAP ON LH COVER

QTY OF OIL : 0.2 L

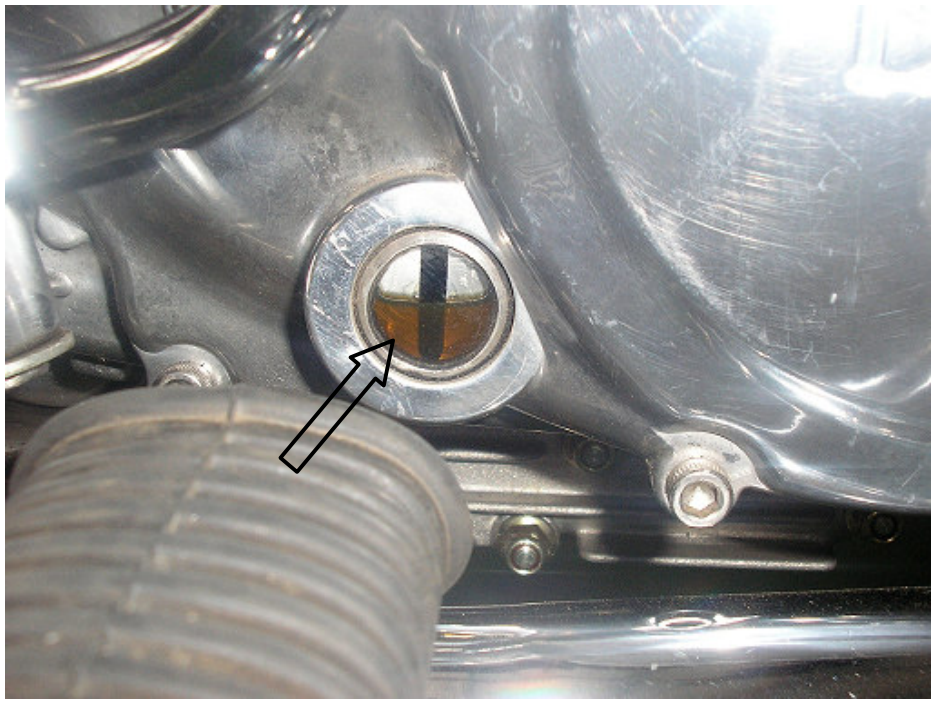
ENGINE OIL QTY : 2.75 L

OIL DRAINING

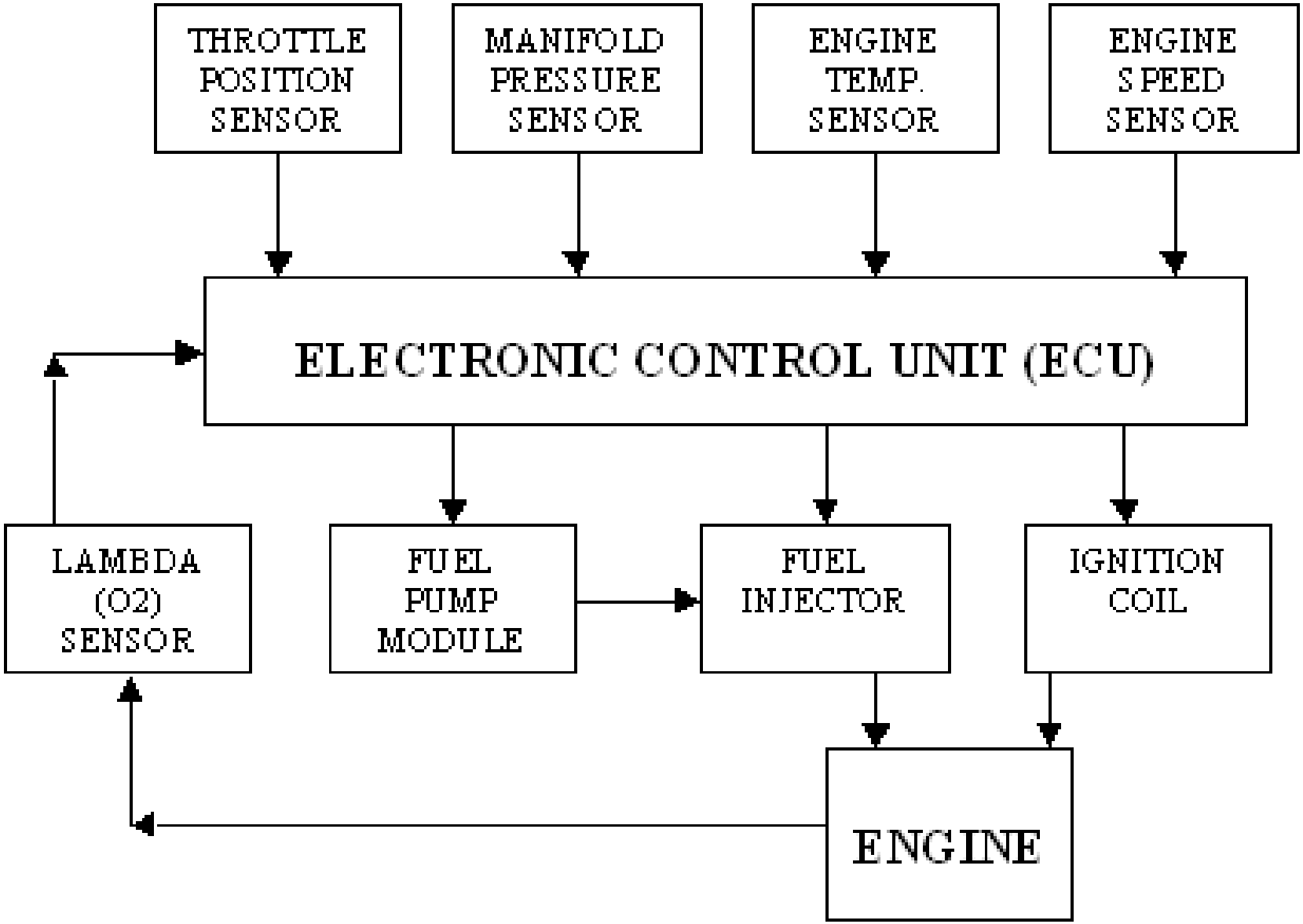


OIL DRAIN PLUG WITH
INBUILD MAGNET

OIL LEVEL WINDOW



- Place motorcycle on its center stand on a firm surface.
- Warm up engine for 2-3 minutes & switch off before checking oil level.
- The level is corrected if the oil level is in the middle of the oil level window.
- Top up with oil if required.



EFI BLOCK DIAGRAM

FUNCTION:

The main system in **EFI** is the computer called **ECU** (Engine Control Unit). This monitors engine operating parameters by taking various inputs like engine speed, engine temp, throttle position, manifold air pressure, exhaust oxygen feed back from respective sensors. Based on the input data, the ECU calculates the ideal amount of fuel to be injected to optimize the air-fuel ratio and also the ignition timing for the spark plug.

INSTRUCTIONS (DO'S & DON'TS)

- Fully Charged Battery should be connected

- Keep the vehicle on center stand or remove the stand and then start the engine
(NOTE: engine will switch OFF if parked on side stand).

- Switch on the ignition key and wait (for app. 3 Sec) until the MIL (MALFUNCTION INDICATOR LAMP) glows off, then start the Engine. If MIL still glows contact the dealer.

- Don't remove any of the sensor connections or couplers

- Don't touch the exhaust bend, O2 sensor and silencer with bare hand when the engine is running or just switched off
(NOTE: Catalytic Converter present inside, the exhaust system will be very hot).

- Don't remove the fuel hose (high pressure) from the fuel pump to fuel injector, while remove proper care should be taken.

PROBLEM MIL BLINKING CONTINUOUSLY

REMEDY:

Check for all the sensor connections plugged in properly and then reset the system by the following procedure

Switch on both the ignition key and kill switch wait, for 10 sec then completely open the throttle for 10 sec, then release the throttle, after 5 sec mil will blink continuously for twice, reset completes. Then switch off the ignition and switch the ignition key wait for 3 sec then start the engine. (note during reset procedure the engine should not be started, only the ign. Key and kill switch is to be turned on.)

ENGINE NOT STARTING:

Check for the side parking stand is on, if so remove the side parking stand and also check for the sensor connections plugged in properly, then reset the system by the above procedure

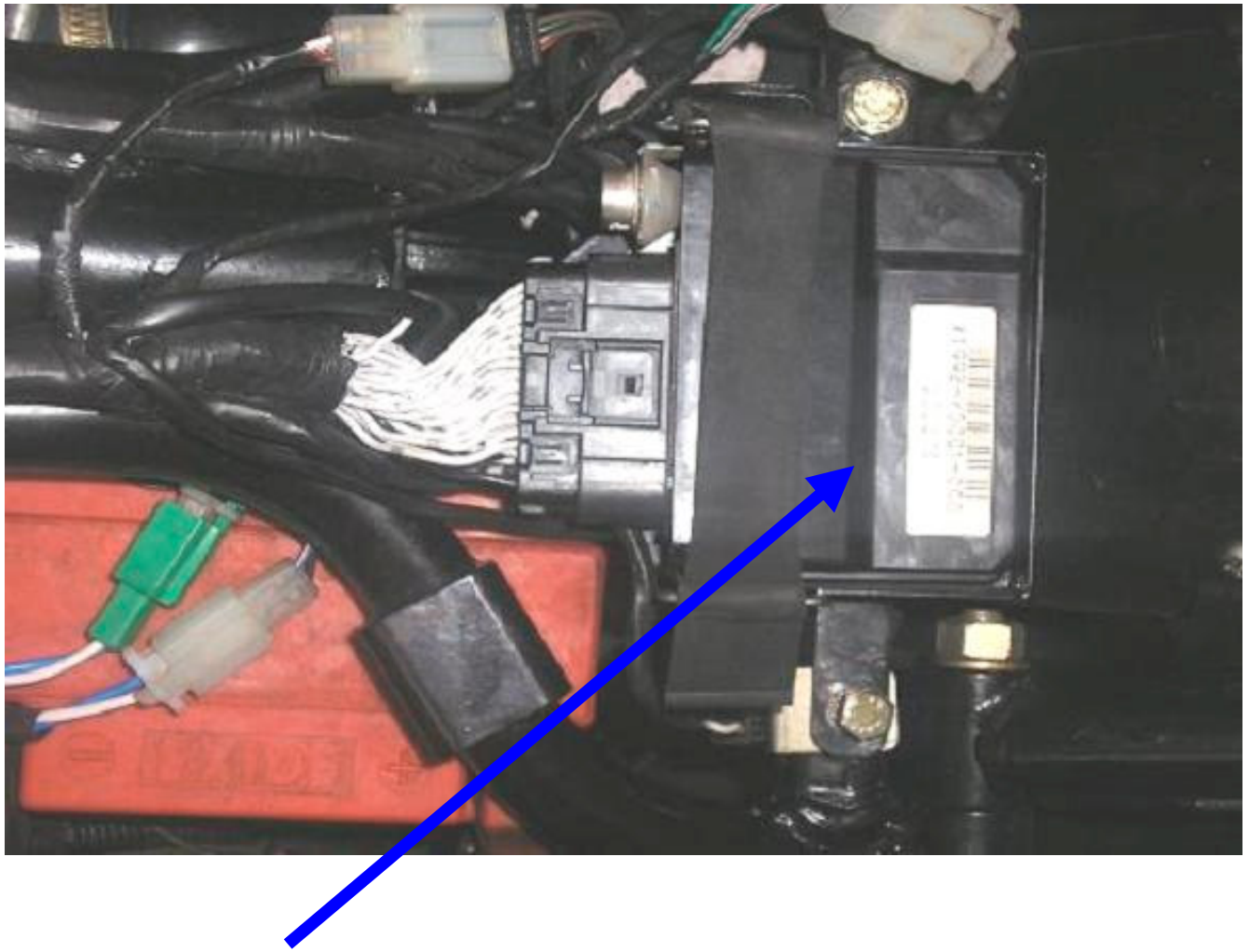
GENERAL INSTRUCTIONS:

- Before attempting to remove any part, turn the ignition switch “OFF” and disconnect the battery ground cable.
- Always use a 12 volt battery as a power source, never use a booster or high voltage charging unit.
- Do not disconnect the battery cables when the engine is running.
- Do not un-plug any wiring connectors with the engine running or the ignition “ON” unless specifically instructed to do so.

- Keep open flame out of workshop area.
- Use a shop towel to hold fuel when opening the fuel system.
- Always keep fire extinguisher in the workshop.
- Always use eye or full face protection when working around fuel lines.
- Do not rev-up the engine immediately after starting or just prior to shut down.
- Keep all ECU parts and harness dry during service. Protect the ECU and its related solid-state components from rough handling or extreme temperature.

LOCATION OF EFI COMPONENTS IN THE VEHICLE

ELECTRONIC CONTROL UNIT



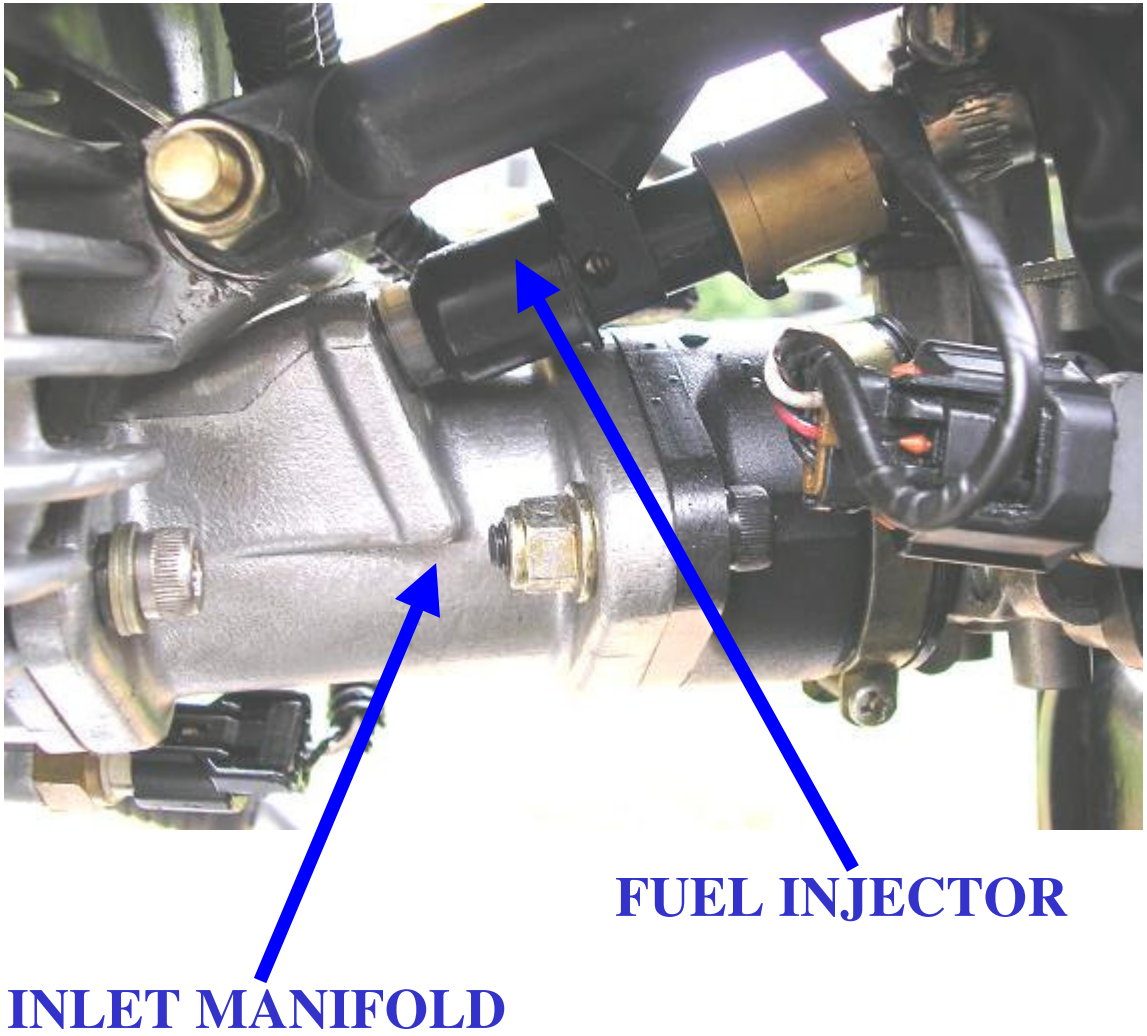
ELECTRONIC CONTROL UNIT

FUEL SYSTEM

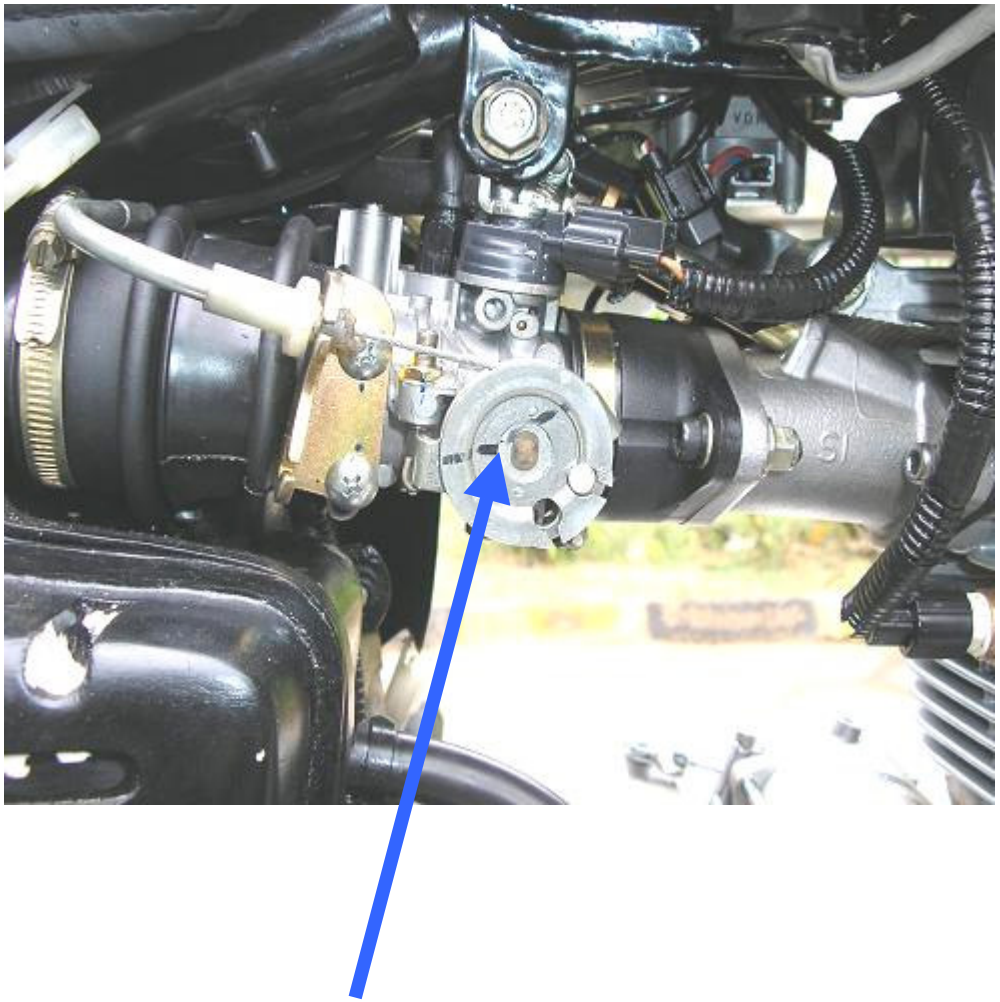
FUEL PUMP MODULE

LOW LEVEL SENSOR

INLET MANIFOLD ASSEMBLY



THROTTLE BODY ASSEMBLY

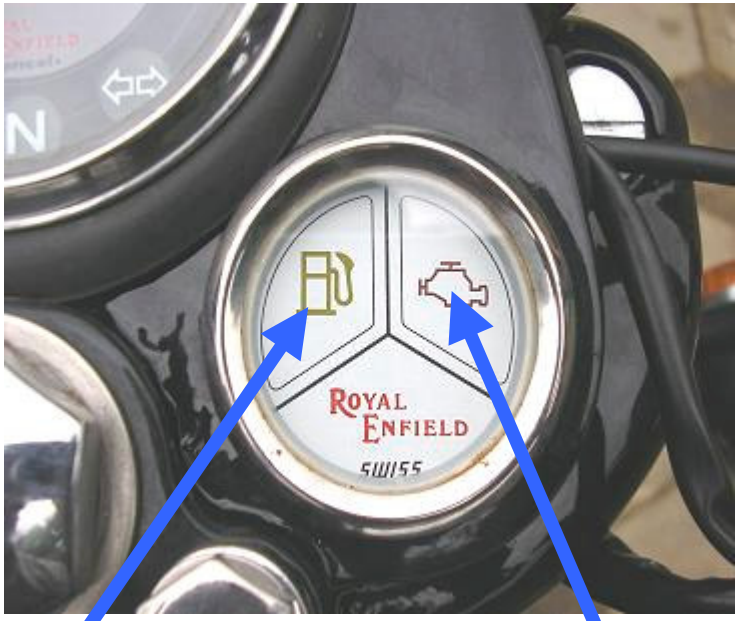


EXHAUST SYSTEM
LAMBDA (O2) SENSOR & CATALYTIC CONVERTOR

LAMBDA SENSOR

CATALYTIC CONVERTOR

WARNING SYSTEM INDICATOR



SPEEDOMETER

LOW FUEL WARNING

MALFUNCTION WARNING

IG KEY FOR START & STOP

IGNITION KEY

KILL SWITCH