# HYOSUNG *GV250 Ei* Dspec *GT250/P/ R Ei* Dspec

## SERVICE MANUAL

99000HB8110

## FOREWORD

This manual contains an introductory description on HYOSUNG " GV250 E DSPCC ] &

"GT250/P/ REI DSDEC ] and procedures for its inspection / service and overhaul of its main components.

It covers the differences from Carbure type and please refer to the service manual of **Aquation** 250

(99000–95310), *Commet* 250 & Commet 125 & (99000HR8310), and *Commet* 250 & Commet 125 (99000–94710), for others which are not covered in this manual.

Other information considered as generally known is not included.

Read GENERAL INFORMATION section to familiarize yourself with outline of the vehicle and MAINTENANCE and other sections to use as a guide for proper inspection and service.

This manual will help you know the vehicle better so that you can assure your customers of your optimum and quick service.

This manual has been prepared on the basis of the latest specification at the time of publication.

If modification has been made since then, difference may exist between the content of this manual and the actual vehicle.

Illustrations in this manual are used to show the basic principles of operation and work procedures.

They may not represent the actual vehicle exactly in detail.

## 

This manual is intended for those who have enough knowledge and skills for servicing HYOSUNG vehicles. Without such knowledge and skills, you should not attempt servicing by relying on this manual only.

Instead, please contact your nearby authorized HYOSUNG motorcycle dealer.

## NOTE

- " GV 250 , model : Aqualla 250
- "GT 250/P/R , model : Comet 250/P/R

## **GROUP INDEX**

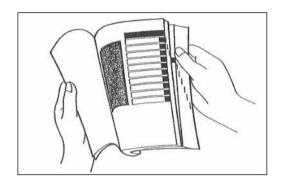
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## HOW TO USE THIS MANUAL

## TO LOCATE WHAT YOU ARE LOOKING FOR :

- 1. The text of this manual is divided into sections.
- 2. As the title of these sections are listed on the previous page as GROUP INDEX, select the section where you are looking for.
- 3. Holding the manual as shown at the right will allow you to find the first page of the section easily.
- 4. On the first page of each section, its contents are listed. Find the item and page you need.



#### SYMBOL

Listed in the table below are the symbols indicating instructions and other information necessary for servicing. The meaning of each symbol is also included in the table.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
U	Torque control required. Data beside it indicates specified torque.	BF	Apply or use brake fluid.
P	Apply oil. Use engine oil unless otherwise specified.		Measure in voltage range.
ÆGH	Apply GREASE.		Measure in resistance range.
<b>ÆS</b> ₽	Apply SILICONE GREASE.	<b>A</b> ⊕ ●	Measure in current range.
<b>FOH</b>	Apply MOLY PASTE.		Measure in diode test range.
GASKET	Apply GASKET BOND.	( □)))	Measure in continuity test range.
FORK	Use fork oil.	TOOL	Use special tool.
	Apply THREAD LOCK.		

## ABBREVIATIONS USED IN THIS MANUAL

Α		L	
ABDC AC API ATDC	: After Bottom Dead Center : Alternating Current : American Petroleum Institute : After Top Dead Center	LCD LED LH	: Liquid Crystal Display : Light Emitting Diode : Left Hand
Р		Μ	
B BBDC BDC	: Before Bottom Dead Center : Bettom Dead Center	Max Min	: Maximum : Minimum
BTDC	: Before Top Dead Center	0	
D		O <sub>2</sub> Sensor	: Oxygen Sensor (O2S)
DC DOHC	: Direct Current : Double Over Head Camshaft	P PV	: Purge control Valve
E		R	
ECU	: Engine Control Unit, El Control Unit	RH RO Switch	: Right Hand : Roll Over Switch
EI	: Electric fuel Injection, Electric fuel Injector		
ET Sensor	: Engine Temperature Sensor (ETS)	SAE	: Society of Automotive Engineers
F		т	
FP	: Fuel Pump	TDC TP Sensor	: Top Dead Center : Throttle Position Sensor (TPS)
G			
GP Switch	: Gear Position Switch		
1			NOTE
IAP Sensor	: Intake Air Pressure Sensor (IAPS)		Front Cylinder Rear Cylinder
IAT Sensor	: Intake Air Temperature Sensor (IATS)		
IG ICC Calancia	: Ignition		
ISC Solenoic	I : Idle Speed Control Solenoid		

## **WIRE COLOR**

В	: Black
L	: Blue
Br	: Brown
G	: Green

- Gr : Gray Lg
  - : Light green
- : Orange 0
- : Red R

Sb	: Light blue
W	: White

Y : Yellow

BL	: Black with Blue tracer	BBr	: Black with Brown tracer
BG	: Black with Green tracer	BO	: Black with Orange tracer
BR	: Black with Red tracer	BW	: Black with White tracer
BY	: Black with Yellow tracer	LB	: Blue with Black tracer
LG	: Blue with Green tracer	LR	: Blue with Red tracer
LW	: Blue with White tracer	LY	: Blue with Yellow tracer
BrB	: Brown with Black tracer	BrW	: Brown with White tracer
GB	: Green with Black tracer	GR	: Green with Red tracer
GY	: Green with Yellow tracer	GrB	: Gray with Black tracer
GrR	: Gray with Red tracer	GrW	: Gray with White tracer
OB	: Orange with Black tracer	OL	: Orange with Blue tracer
OG	: Orange with Green tracer	OR	: Orange with Red tracer
OW	: Orange with White tracer	OY	: Orange with Yellow tracer
RB	: Red with Black tracer	RW	: Red with White tracer
WB	: White with Black tracer	WL	: White with Blue tracer
WR	: White with Red tracer	YB	: Yellow with Black tracer
YL	: Yellow with Blue tracer	YG	: Yellow with Green tracer
YR	: Yellow with Red tracer		

## GENERAL INFORMATION

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## 1

## **EXTERIOR PHOTOGRAPH**



GV250 E i Dspec





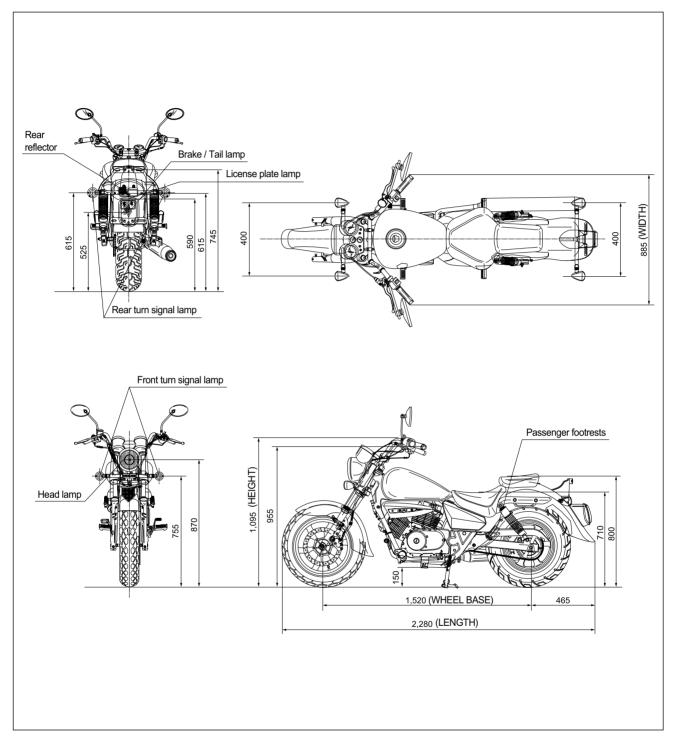
## **EXTERIOR PHOTOGRAPH**



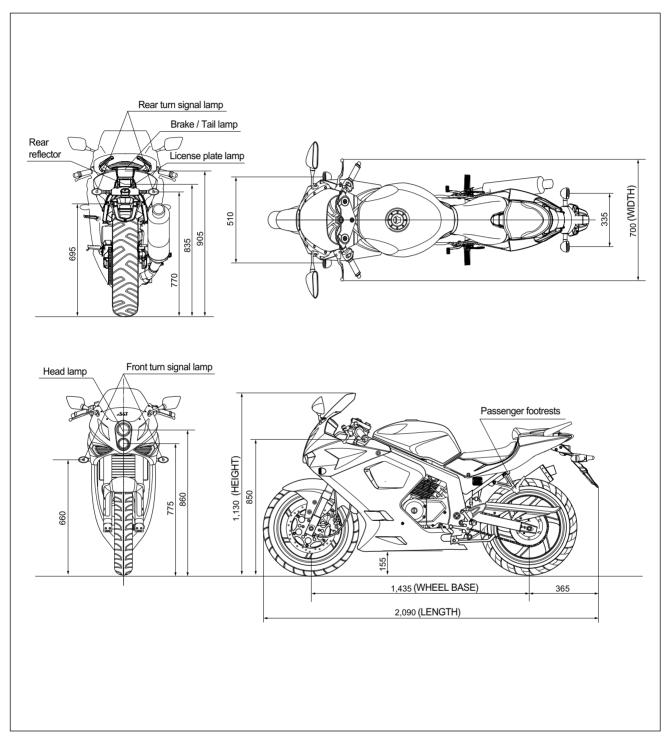




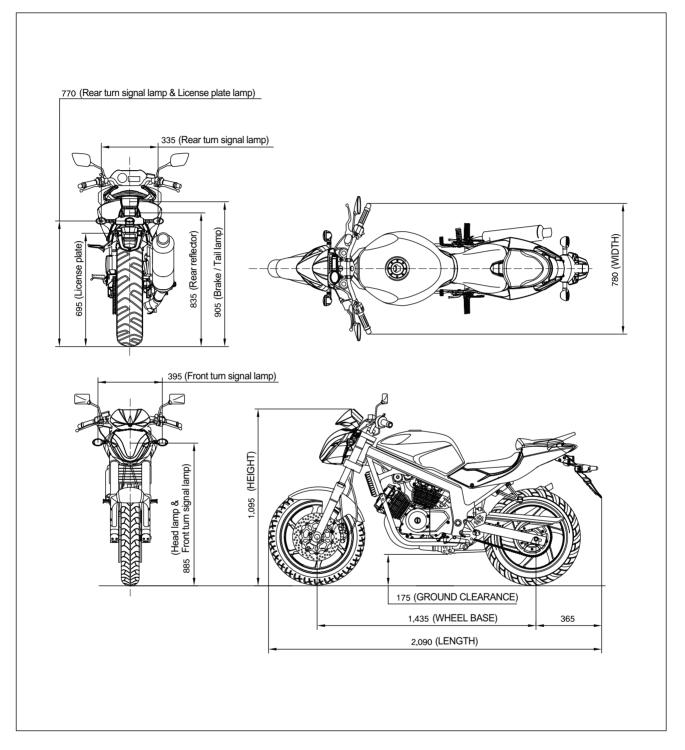




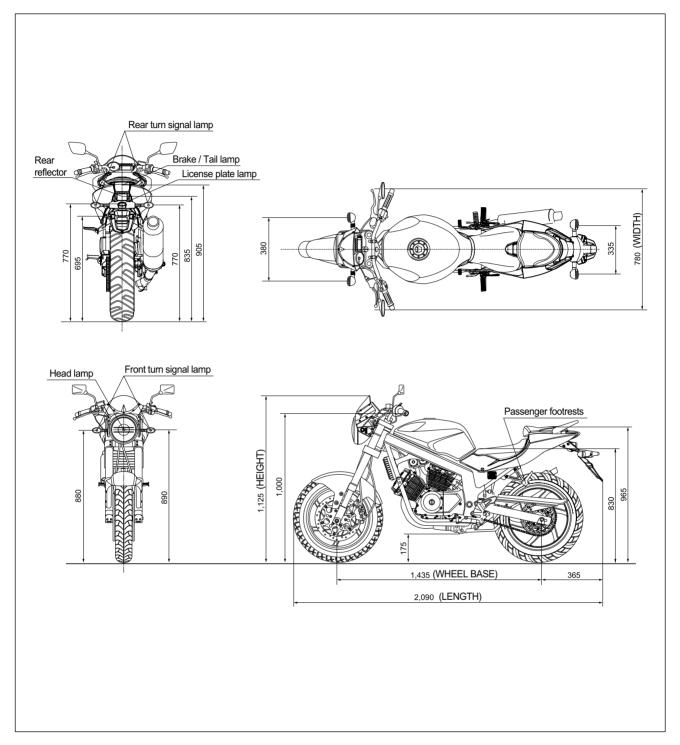
## EXTERIOR ILLUSTRATION [ GT 250 R Ef Dspec ]











## **FUNCTION OF EI SENSOR**

## ★ ECU (Engine Control Unit, El Control Unit)

: ECU decide the fuel injection volume and ignition time to adjust the fuel injector opening and closing rate which is considered the engine speed, intake air pressure, intake air volume, engine temperature, oxygen volume and throttle opening angle, etc.

## ★ EI (Electric fuel Injector)

: El spray the fuel to intake pipe by ECU's injection signal.

Fuel which is needed combustion in the combustion chamber is supplied from the fuel tank.

## ★ ET sensor (Engine Temperature Sensor : ETS)

: ET sensor communicate the perceived engine temperature to ECU.

ET sensor is located the outside of the cylinder to measure the engine temperature.

## ★ GP switch (Gear Position Switch)

: GP switch is used when start / stop and control ECU as the converted electrical signal of the gear position is supplied ECU.

### ★ IAP sensor (Intake Air Temperature : IAPS)

: IAP sensor measure the pressure which is generated from the intake pipe and compare with the provided absolute pressure, then analogize the air volume indirectly and help to work the fuel injector properly.

### ★ IAT sensor (Intake Air Temperature Sensor : IATS)

: IAT sensor perceive the atmospheric temperature and is located the air cleaner case.

### ★ ISC solenoid (Idle Speed Control Solenoid)

: ISC solenoid is interlocked with the throttle body, so ECU control the engine idle speed.

## ★ O₂ sensor (Oxygen Sensor : O₂S)

: O<sub>2</sub> sensor measure the oxygen volume from the exhaust gas and convert the oxygen volume into voltage value, then communicate the output voltage to ECU.

## ★ Pick-up Coil

: Pick-up coil perceive the front and rear cylinder's engine speed and realtime of piston position.

### ★ PV (Purge control Valve)

: Purge control valve is part of the evaporative emission control system. The purge control valve closes to prevent the vapor from reaching the engine when it is turned off. When the engine is started and is ready to receive the canister's contents, the purge control valve opens to allow the vapor flow.

## ★ RO switch (Roll Over Switch)

: RO switch is the fuel cut-off system when the motorcycle is leaned over 60° for upset accident.

### ★ TP sensor (Throttle Position Sensor : TPS)

: TP sensor detect the throttle opening angle and is located the throttle body.

It decide the fuel injection volume and compensate the ignition time as inform idle  $\cdot$  acceleration  $\cdot$  deceleration condition and throttle full opening etc. to ECU.

## **SPECIFICATIONS**

## **● DIMENSIONS AND MASS**

ITEM	HV250 EF D spec	GT250REI D spec
Overall length	2,280 mm (89.8 in)	2,090 mm (82.3 in)
Overall width	885 mm (34.8 in)	700 mm (27.6 in)
Overall height	1,095 mm (43.1 in)	1,130 mm (44.5 in)
Wheelbase	1,520 mm (59.8 in)	1,435 mm (56.5 in)
Ground clearance	150 mm (5.9 in)	155 mm (6.1 in)
Mass	175 kg (386 lbs)	190 kg (419 lbs)

## • ENGINE

ITEM	<b>GV250 EF</b> D spec	GT250 REI D spec
Туре	Four-stroke, DOHC, air-cooled and oil-cooled	<u> </u>
Number of cylinder	V-2 cylinder	<del>~ -</del>
Bore	57.0 mm (2.24 in)	<b>←</b>
Stroke	48.8 mm (1.92 in)	<b>←</b>
Piston displacement	249 <sub>Cm<sup>3</sup></sub> (15.2 in <sup>3</sup> )	<del>~ -</del>
Fuel system	Electric fuel Injection	< <u>←</u>
Starter system	Electric starter	<u> </u>
Lubrication system	Wet sump	<

## **● TRANSMISSION**

ITI	ΞM	RV250 EF D spec	GT250REI Dspec
Clu	itch	Wet multi-plate type	←
Transr	nission	5-speed constant mesh	←
Gearshi	ft pattern	1-down, 4-up	<del>~ _</del>
Reduct	on ratio	3.290	<del>~ _</del>
	1st	2.460	<del>~</del>
	2nd	1.560	←
Gear ratio	3rd	1.190	<del>~ _</del>
	4th	0.960	<u>←</u>
	5th	0.840	<u> </u>
Drive	chain	520HO, 116 links	520HO, 112 links

## O CHASSIS

ITEM	<b>BV250 EF</b> D spec	GT250REI Dspec
Front suspension	Telescopic type	←
Rear suspension	Swingarm type	←
Steering angle	40 ° (right & left)	27 ° (right & left)
Caster	34 °	25.5 °
Trail	142 mm (5.59 in)	90 mm (3.54 in)
Front brake	Disk brake	Double disk brake
Rear brake	Drum brake	Disk brake
Front tire size	110/90 - 16 59S	110/70 - 17 54H
Rear tire size	150/80 - 15M/C 70S	150/70 - 17 69H
Front fork stroke	120 mm (4.72 in)	<del>~ -</del>

## ● ELECTRICAL

ITEM		GV 250 ET D spec	GT250 REI Dspec
Ignition type		ECU	< <u>←</u>
Ignition timin	g	13 ° B.T.D.C. at 2,000 rpm and 30 ° B.T.D.C. at 6,000 rpm	←
Spark plug		CR8E	<del>~ -</del>
Battery		12 V 10 Ah (MF)	←
Fuse		30 A & 15 A	←
Head Jamp	HI	12 V - H4 : 60/55 W $ imes$ 1	12 V - H1 : 55 W × 1
Head lamp	LO	12 V - 114 : 00/33 VV × 1	12 V - H3 : 55 W × 1
Turn signal lar	np	12 V - RY10 W × 4	←
Brake / Tail lar	np	12 V - P21/5 W × 1	LED type
License plate la	Imp	12 V - W5 W $ imes$ 1	←
Illumination lar	np	LED type	<del>~ -</del>
High beam indicator lamp		12 V - 1.7 W × 1	LED type
Turn signal indicator lamp(right & left)		12 V - 1.7 W × 2	LED type
Neutral indicator lamp		12 V - 1.7 W × 1	LED type
Fuel meter lamp		LCD type	<del>~</del>
"FI" (Fuel Injection) check lamp		LED type	←

#### **\* LED : Light Emitting Diode**

LCD : Liquid Crystal Display

### OCAPACITIES

ITEM		<b>HV250</b> EI D spec	GT250REI Dspec
Fuel tank		14.0 Q	17.0 Q
	Oil change	1,450 ml	<del>~ _</del>
Engine oil	Oil and filter change	1,500 ml	<del>~ -</del>
	Engine overhaul	1,800 ml	←
Front fork oil capacity (One side)		260 cc	$400 \pm 2.5 cc$

### NOTE

The specifications are subject to change without notice.

## ● DIMENSIONS AND MASS

ITEM	GT250 PEi Dspec	GT250EF Dspec
Overall length	2,090 mm (82.3 in)	
Overall width	780 mm (30.7 in)	<del>~ -</del>
Overall height	1,095 mm (43.1 in)	1,125 mm (44.3 in)
Wheelbase	1,435 mm (56.5 in)	<del>~</del>
Ground clearance	175 mm (6.9 in)	<del>~</del>
Mass	170 kg (375 lbs)	←

## • ENGINE

ITEM	GT250 PEI Dspec	GT 250 EF D spec
Туре	Four-stroke, DOHC, air-cooled and oil-cooled	←
Number of cylinder	V-2 cylinder	<u>←</u>
Bore	57.0 mm (2.24 in)	←
Stroke	48.8 mm (1.92 in)	←
Piston displacement	249 cm³ (15.2 in <sup>3</sup> )	←
Fuel system	Electric fuel Injection	←
Starter system	Electric starter	←
Lubrication system	Wet sump	<del>~ -</del>

## **⊙** TRANSMISSION

ITEM		GT250 PEI Dspec	GT 250 EF D spec
Clu	tch	Wet multi-plate type	←
Transn	nission	5-speed constant mesh	←
Gearshif	t pattern	1-down, 4-up	←
Reducti	on ratio	3.290	<del>~ -</del>
	1st	2.460	<del>~ -</del>
	2nd	1.560	←
Gear ratio	3rd	1.190	←
	4th	0.960	←
	5th	0.840	<del>~</del>
Drive chain		520HO, 112 links	<del>~</del>

## ● CHASSIS

ITEM	GT250 PEI Dspec	GT 250 EF D spec
Front suspension	Telescopic type	←
Rear suspension	Swingarm type	←
Steering angle	27 ° (right & left)	←
Caster	25.5	←
Trail	90 mm (3.54 in)	←
Front brake	Double disk brake	Disk brake
Rear brake	Disk brake	←
Front tire size	110/70 - 17 54H	←
Rear tire size	150/70 - 17 69H	<del>~ -</del>
Front fork stroke	120 mm (4.72 in)	←

## ● ELECTRICAL

ITEM		GT250 PEI D spec	GT250 = D spec
Ignition type		ECU	<del>~ _</del>
Ignition timing		13 ° B.T.D.C. at 2,000 rpm and 30 ° B.T.D.C. at 6,000 rpm	<u> </u>
Spark plug		CR8E	←
Battery		12 V 10 Ah (MF)	←
Fuse		30 A & 15 A	←
Head lamp	HI LO	12 V - H4 : 60/55 W × 1	←
Position lamp	)	12 V - W5 W × 2	X
Turn signal lar	np	12 V - RY10 W × 4	←
Brake / Tail lar	np	LED type	←
License plate la	mp	12 V - W5 W × 1	←
Illumination lar	np	LED type	←
High beam indicator lamp		LED type	<b>←</b>
Turn signal indicator lamp(right & left)		LED type	←
Neutral indicator lamp		LED type	<del>~</del>
Fuel meter lamp		LCD type	←
"FI"(Fuel Injection) ch	eck lamp	LED type	<del>~</del>

\* LED : Light Emitting Diode LCD : Liquid Crystal Display

## • CAPACITIES

ITEM		GT 250 PEI D spec	GT250EF D spec	
	Fuel tank	17.0 Q		
	Oil change	1,450 ml	<b>←</b>	
Engine oil	Oil and filter change	1,500 ml	<b>←</b>	
	Engine overhaul	1,800 ml	<b>←</b>	
Front fork oil capacity (One side)		$400 \pm 2.5 \text{ cc}$	←	
NOTE				
The specifications are subject to change without notice.				

## EI SYSTEM DIAGNOSIS

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## 4 -1

## **PRECAUTIONS IN SERVICING**

When handling the component parts or servicing the El system, observe the following points for the safety of the system.

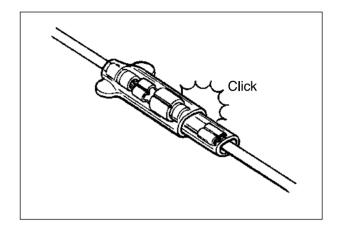
#### ELECTRICAL PARTS

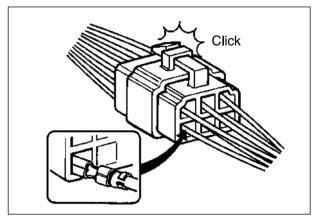
#### CONNECTOR / COUPLER

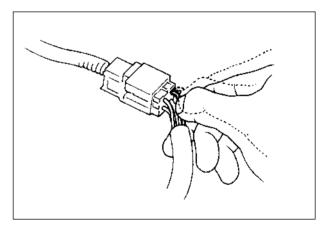
- When connecting a connector, be sure to push it in until a click is felt.
- With a lock type coupler, be sure to release the lock when disconnecting, and push it in fully till the works when connecting it.
- When disconnecting the coupler, be sure to hold the coupler body and do not pull the lead wires.
- Inspect each terminal on the connector / coupler for looseness or bending.
- Inspect each terminal for corrosion and contamination.

The terminals must be clean and free of any foreign material which could impede proper terminal contact.

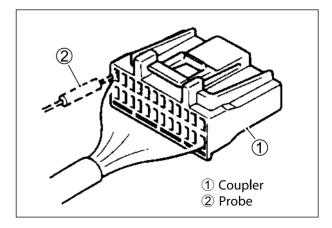
 Inspect each lead wire circuit for poor connection by shaking it by hand lightly. If any abnormal condition is found, repair or replace.







• When taking measurements at electrical connectors using a tester probe, be sure to insert the probe from the wire harness side (backside) of the connector / coupler.



When connecting meter probe from the terminal side of the coupler (connection from harness side not being possible), use extra care not to force and cause the male terminal to bend or the female terminal to open.

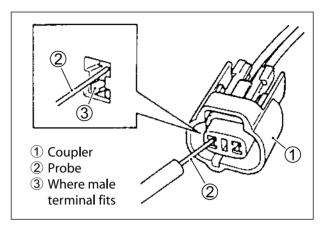
Connect the probe as shown to avoid opening of female terminal.

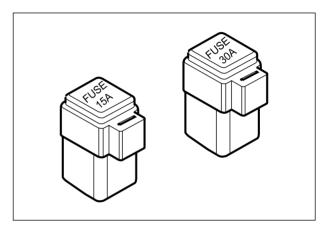
Never push in the probe where male terminal is supposed to fit.

 Check the male connector for bend and female connector for excessive opening. Also check the coupler for locking (looseness), corrosion, dust, etc.

## • FUSE

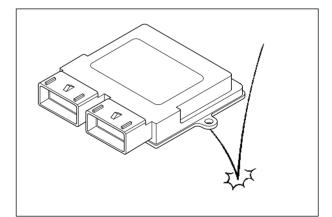
- When a fuse blows, always investigate the cause to correct it and then replace the fuse.
- Do not use a fuse of a different capacity.
- Do not use wire or any other substitute for the fuse.





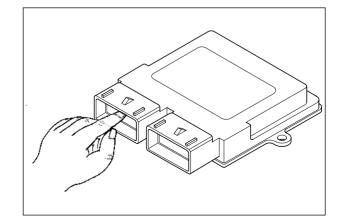
### ● ECU / VARIOUS SENSORS

• Since each component is a high-precision part, great care should be taken not to apply any sharp impacts during removal and installation.



 Be careful not to touch the electrical terminals of the ECU.

The static electricity from your body may damage this part.



#### **4-1-3 EI SYSTEM DIAGNOSIS**

• When disconnecting and connecting the ECU, make sure to turn "OFF" the ignition switch, or electronic parts may get damaged.

• Battery connection in reverse polarity is strictly prohibited.

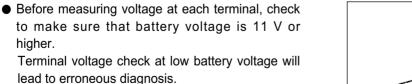
Such a wrong connection will damage the components of the EI system instantly when reverse power is applied.

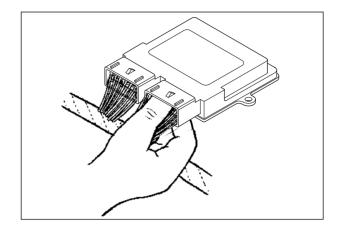
• Removing any battery terminal of a running engine is strictly prohibited.

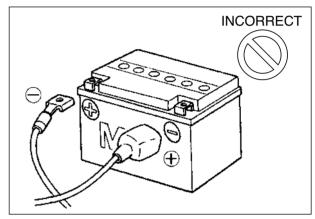
The moment such removal is made, damaging counter electromotive force will be applied to the ECU which may result in serious damage.

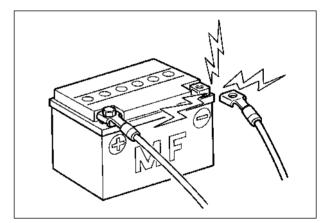
higher.

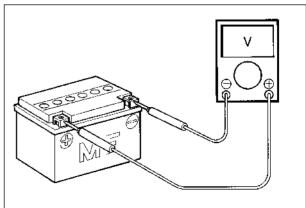
lead to erroneous diagnosis.











- Never connect an ohmmeter to the ECU with its coupler connected. If attempted, damage to ECU or sensors may result.
- Be sure to use a specified voltmeter / ohmmeter. Otherwise, accurate measurements may not be obtained and personal injury may result.

#### • USING TESTERS

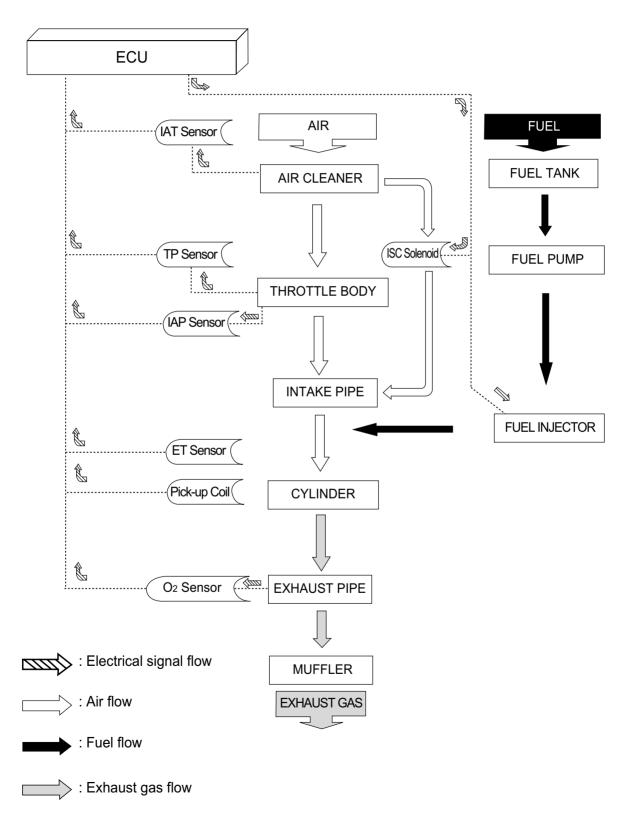
- Use well-charged batteries in the tester.
- Be sure to set the tester to the correct testing range.

#### **USING THE TESTER**

- Incorrectly connecting the ⊕ and ⊖ probes may cause the inside of the tester to burnout.
- If the voltage and current are not known, make measurements using the highest range.
- After using the tester, turn the power off.

## **EI SYSTEM TECHNICAL FEATURES**

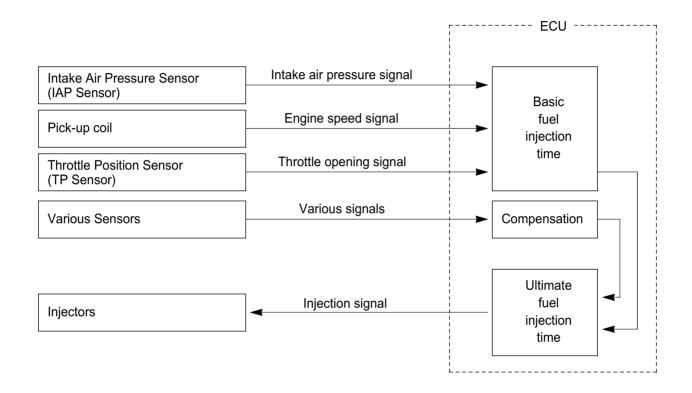
## ● GV250 EI DSPEC」& GT250/P/ REI DSPEC」 EI SYSTEM'S CONTROL DIAGRAM



### ● INJECTION TIME (INJECTION VOLUME)

The factors to determine the injection time include the basic fuel injection time, which is calculated on the basis of intake air pressure, engine speed and throttle opening angle, and various compensations.

These compensations are determined according to the signals from various sensors that detect the engine and driving conditions.



## ● COMPENSATION OF INJECTION TIME (VOLUME)

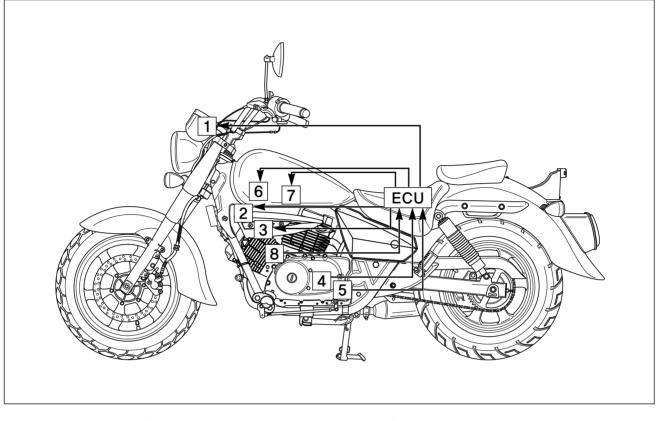
The following different signals are output from the respective sensors for compensation of the fuel injection time (volume).

SIGNAL	DESCRIPTION
ENGINE TEMPERATURE SENSOR SIGNAL	When engine temperature is low, injection time (volume) is increased.
INTAKE AIR TEMPERATURE SENSOR SIGNAL	When intake air temperature is low, injection time (volume) is increased.
BATTERY VOLTAGE SIGNAL	ECU operates on the battery voltage and at the same time, it monitors the voltage signal for compensation of the fuel injection time (volume). A longer injection time is needed to adjust injection volume in the case of low voltage.
ENGINE RPM SIGNAL	At high speed, the injection time (volume) is increased.
STARTING SIGNAL	When starting engine, additional fuel is injected during cranking engine.
ACCELERATION SIGNAL / DECELERATION SIGNAL	During acceleration, the fuel injection time (volume) is increased in accordance with the throttle opening speed and engine rpm. During deceleration, the fuel injection time (volume) is decreased.

## **●** INJECTION STOP CONTROL

SIGNAL	DESCRIPTION		
ROLL OVER SWITCH SIGNAL (FUEL CUT-OFF)	When the motorcycle rolls over, the roll over switch sends a signal to the ECU. Then, this signal cuts OFF current supplied to the fuel pump, fuel injector and ignition coil.		
OVER-REV. LIMITER SIGNAL	The fuel injectors stop operation when engine rpm reaches rev. limit rpm.		

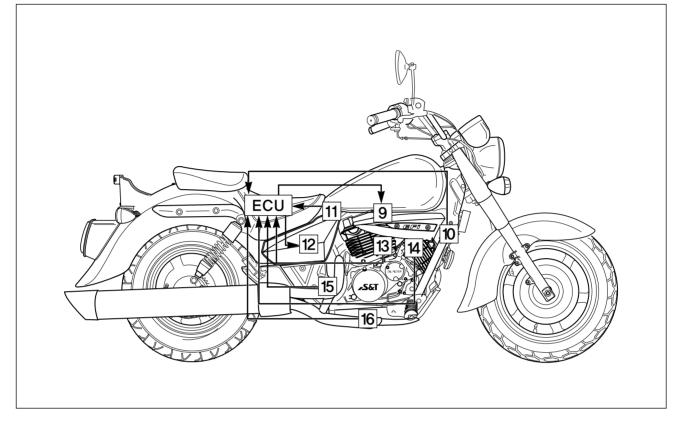
## • EI SYSTEM PARTS LOCATION [ GV250 E DSpec ]



- Speedometer
   Ignition coil, NO.1
   Ignition coil, NO.2
- ④ Pick-up coil

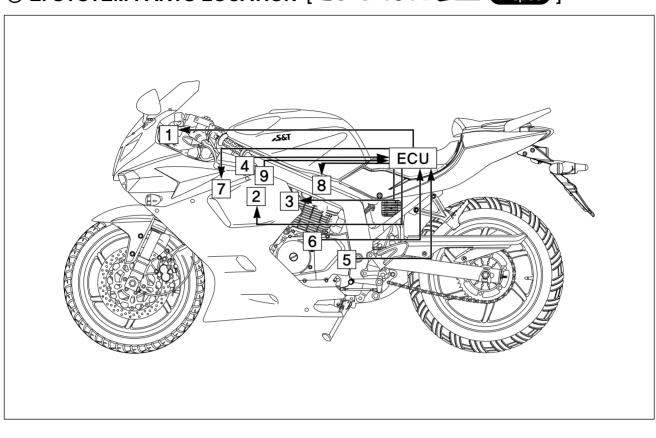
- ⑤ GP switch
- 6 Fuel injector, NO.1
- ⑦ Fuel injector, NO.2
- (8) TP sensor

#### 4-1-9 EI SYSTEM DIAGNOSIS



- (9) ISC solenoid(10) IAT sensor
- (f) RO switch
- <sup>(2)</sup> Fuel pump relay
- (3) IAP sensor

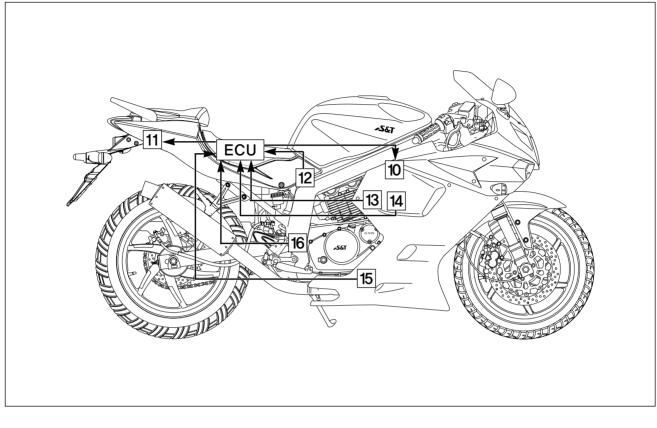
ET sensor
Oxygen sensor, NO.1
Oxygen sensor, NO.2



• EI SYSTEM PARTS LOCATION [GT250/P/ REI DSDEC]

- ① Speedometer
- ② Fuel injector, NO.1
- ③ Fuel injector, NO.2
- 4 IAT sensor
- 5 GP switch

- 6 Pick-up coil
- O Ignition coil, NO.1
- ⑧ Ignition coil, NO.2
- $\textcircled{9} \mathsf{TP} \mathsf{sensor}$



(1) ISC solenoid
(1) Fuel pump relay
(2) RO switch
(3) IAP sensor

(A) ET sensor(5) Oxygen sensor, NO.1(6) Oxygen sensor, NO.2

## SELF-DIAGNOSIS FUNCTION [GT250/P/REJ DSPEC]

The self-diagnosis function is incorporated in the ECU.

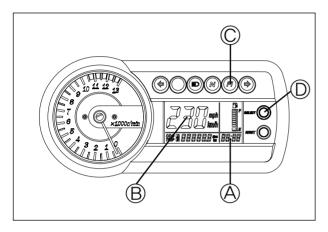
The function has two modes, "USER MODE" and "DEALER MODE".

The user can be notified by the LCD display panel (B) and the "FI" check lamp " (P) " (C).

To check the function of the individual EI system devices, the dealer mode is prepared.

In this check, the special tool and additional operations is necessary to read the code of the malfunction items.

#### **•** USER MODE



In case of GT250/P/REI Dspec ,

the LCD display panel B indicates "FI" letters and speedometer alternately, and the "FI" check lamp " P " C comes on and remains lit when the ignition switch is set to "ON" position with the engine stopped as a test of injection system operation.

As soon as the engine starts, the LCD display panel (B) indicates speedometer continuously and "FI" check lamp " (R) " (C) should go out.

If the fuel injection system fails,

A the LCD display panel B does not indicate "FI" letters and speedometer alternately, and the "FI" check lamp " () " () does not come on

when the ignition switch is set to "ON" position with the engine stopped.

B the LCD display panel B indicates "FI" letters and speedometer alternately, and the "FI" check lamp " () " C comes on and remains lit after the engine start.

#### • DEALER MODE

The defective function is memorized in the ECU.

The memorized malfunction code is displayed on the clock screen A or with blinks signal of the "FI" check lamp " P " C. Malfunction means that the ECU does not receive signal from the devices or fault signal received.

These affected devices are indicated in the code form on the clock screen  $\triangle$  or displayed with blinks signal of the "FI" check lamp " ( $\overrightarrow{\mathbf{n}}$ ) "  $\bigcirc$ .

#### A. LCD (DISPLAY) PANEL

To confirm the memorized malfunction code through the clock screen A :

- 1. Remove the rear seat.
- 2. Connect the special tool to the dealer mode coupler at the wiring harness, and the ignition switch is set to the "ON" position.

#### Mode select switch : 09900-27000

- 3. Turn the special tool's switch to the "ON" position.
- 4. Press the select switch D (in the normal mode) for 2 seconds to the clock screen A is "the clock reset mode.". In that state, continuously pressing the select switch D for 3 seconds, the clock screen A is displayed "the malfunction code mode.

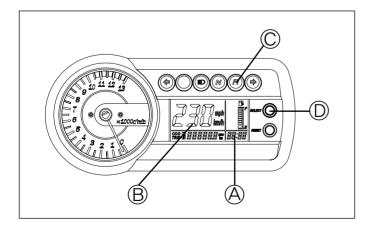
## NOTE

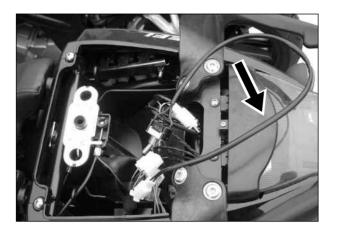
This time, if not connect the special tool, the LCD display panel B indicates the "cHE" letters. Pressing the select switch D for 0.6 ~ 1 seconds, the "cHE" letters disappear.

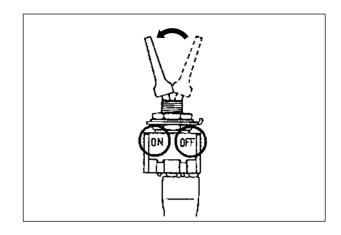
- 5. The memorized malfunction code is displayed in the code form on the clock screen (A).
- 6. Start the engine and repeat the above procedure.
- 7. Check the malfunction code to determine the malfunction part.
- 8. Pressing the select switch () (in the malfunction code mode) for 0.6 ~ 1 seconds, "the malfunction code mode\_ is changed into the CLOCK.

### NOTE

The malfunction code of the clock screen (A) is displayed the current code(s).







## ▲ CAUTION

- Confirm the malfunction code after turning the ignition switch "ON" position and starting the engine separately.
- **\*** The dealer mode coupler of the wiring harness is located under the rear seat.

CLASSIFICATION	MALFUNCTION	CLOCK SCREEN	"FI" CHECK LAMP INDICATION ©	INDICATION MODE
IGNITION SWITCH	"NO"	noEr	"FI" check lamp comes on continually.	
"ON" POSTION	"YES"	**** code is indicated in order of occurrence.	"FI" check lamp comes on continually.	For each 2 sec., code is indicated.
ENGINE	"NO"	noEr	"FI" check lamp goes off.	
RUNNING	"YES"	**** code is indicated in order of occurrence.	"FI" check lamp comes on continually.	For each 2 sec., code is indicated.

## NOTE

Pressing the select switch () (in the "noEr" display state) for 0.6 ~ 1 seconds, it is changed into the CLOCK.

#### 4-1-15 EI SYSTEM DIAGNOSIS

#### B. "FI" CHECK LAMP

To confirm the memorized malfunction code through the "FI" check lamp " () : 1. Turn the ignition switch alternately, "ON" and "OFF" position, for 2 seconds by three times.

## **▲ CAUTION**

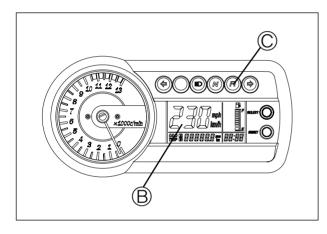
Take special care when operating above procedure. If the ignition switch is turned alternately, "ON" and "OFF" position, for 2 seconds by five times, the ECU is initialized.

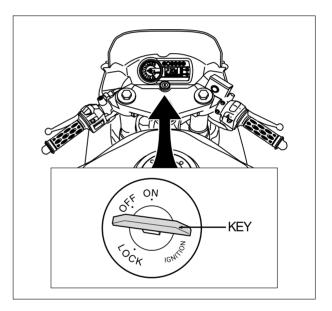
2. The memorized malfunction code is displayed with blinks signal of the "FI" check lamp " (7) " (C).

3. Check the malfunction code to determine the malfunction part.

## NOTE

The malfunction code of the "FI" check lamp is displayed both the current code(s) and history code(s).





MALFUNCTION	LCD DISPLAY INDICATION B	"FI" CHECK LAMP INDICATION ©
"NO"	Indicates "FI" letters	"FI" check lamp comes on continually.
"YES"	and speedometer alternately.	Malfunction code is blinked in order of occurrence.

## SELF-DIAGNOSIS FUNCTION [ GV250 E J DSpec ]

The self-diagnosis function is incorporated in the ECU.

The function has two modes, "USER MODE" and "DEALER MODE".

The user can only be notified by the "FI" check lamp "  $\widehat{\mathbf{P}}$  "  $\bigcirc$ .

To check the function of the individual EI system devices, the dealer mode is prepared.

In this check, the additional operations is necessary to read the code of the malfunction items.

## ● USER MODE

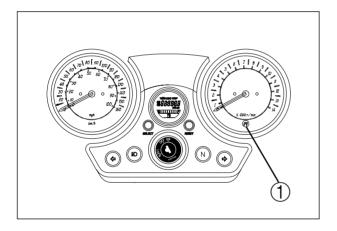
The "FI" check lamp " (n) " (1) comes on when the ignition switch is set to "ON" position with the engine stopped as a test of injection system operation.

As soon as the engine starts, this lamp should go out.

If the fuel injection system fails,

the red "FI" check lamp " (1)

does not come on when the ignition switch is set to "ON" position with the engine stopped or fail to go out after the engine start.



#### • DEALER MODE

The defective function is memorized in the ECU.

The memorized malfunction code is displayed with blinks signal of the "FI" check lamp "  $\bigcirc$  "  $\bigcirc$ . Malfunction means that the ECU does not receive signal from the devices or fault signal received. These affected devices are displayed with blinks signal of the "FI" check lamp "  $\bigcirc$  "  $\bigcirc$ .

To confirm the memorized malfunction code through the "FI" check lamp " () : 1. Turn the ignition switch alternately, "ON" and "OFF" position, for 2 seconds by three times.

## 

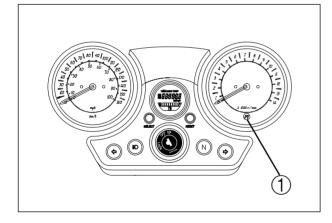
Take special care when operating above procedure. If the ignition switch is turned alternately, "ON" and "OFF" position, for 2 seconds by five times, the ECU is initialized.

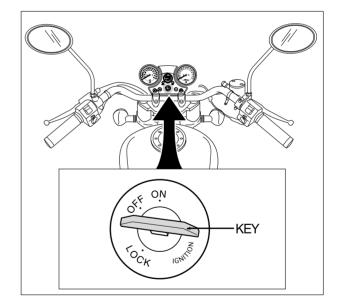
2. The memorized malfunction code is displayed with blinks signal of the "FI" check lamp " (1).

3. Check the malfunction code to determine the malfunction part.

## NOTE

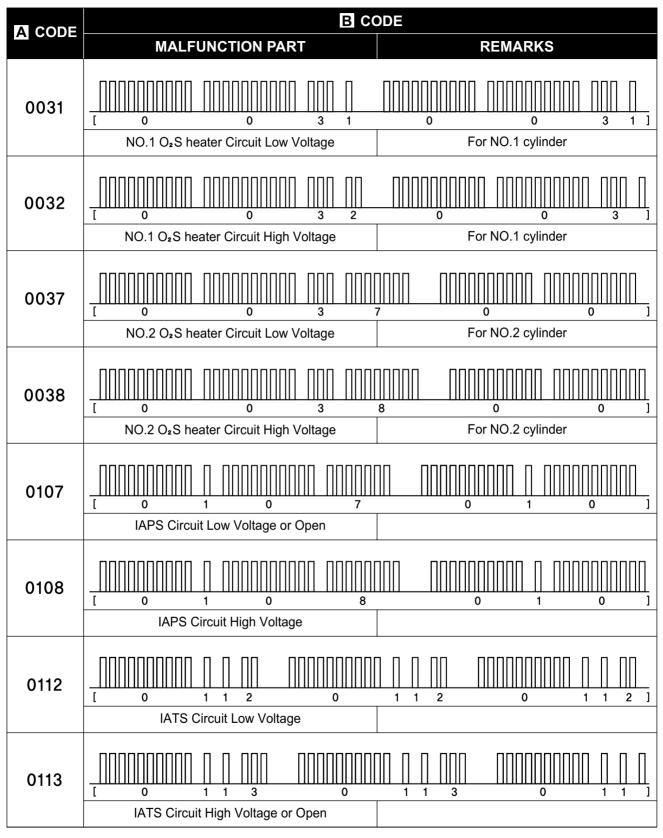
The malfunction code of the "FI" check lamp is displayed both the current code(s) and history code(s).





MALFUNCTION	"FI" CHECK LAMP INDICATION ①
"NO"	"FI" check lamp comes on continually.
"YES"	Malfunction code is blinked in order of occurrence.

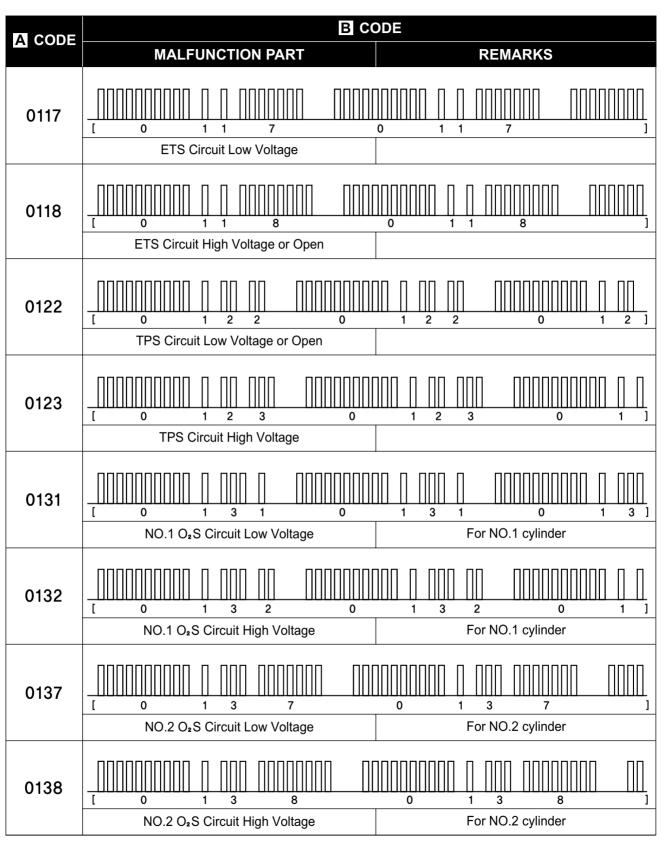
#### EI SYSTEM DIAGNOSIS 4-1-18



\* A CODE : For LCD (DISPLAY) indication [Applies only to GT250/P/ REIDSON]]

B CODE : For "FI" check lamp indication [Applies both to GT250/P/REIDSDED] & GV250 EI DSDED]

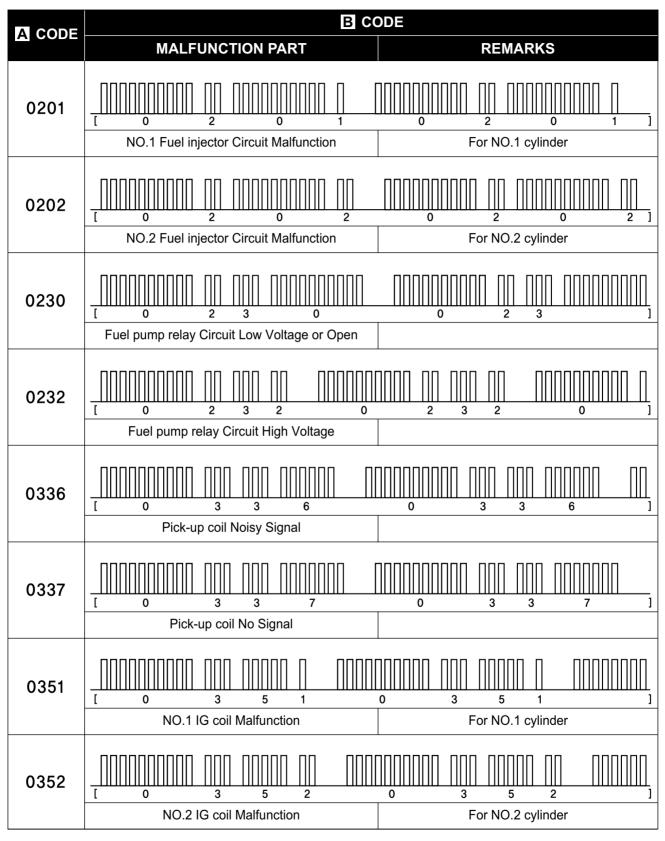
## 4-1-19 EI SYSTEM DIAGNOSIS



\* A CODE : For LCD (DISPLAY) indication [Applies only to GT250/P/REIDSOC]]

B CODE : For "FI" check lamp indication [Applies both to GT250/P/REI DSPCC & GV250 EI DSPCC ]

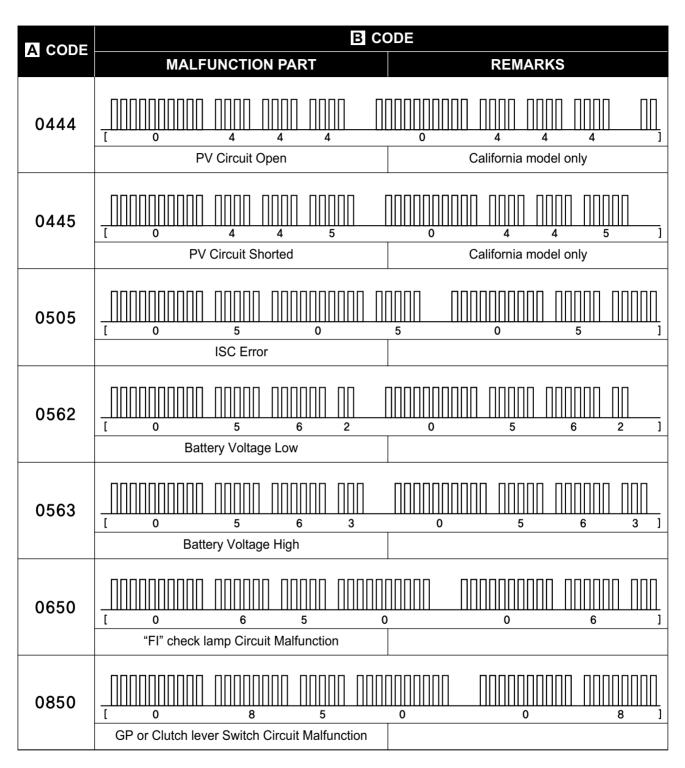
## EI SYSTEM DIAGNOSIS 4-1-20



\* A CODE : For LCD (DISPLAY) indication [Applies only to GT250/P/REIDSOC]]

B CODE : For "FI" check lamp indication [Applies both to GT250/P/REIDSDED & GV250 EI DSDED ]

## 4-1-21 EI SYSTEM DIAGNOSIS



\* A CODE : For LCD (DISPLAY) indication [Applies only to "GT250/P/ R EI DSDED]
 B CODE : For "FI" check lamp indication [Applies both to "GT250/P/ R EI DSDED] & "GV250 EI DSDED]

#### GT250/P/REI Dspec

#### A. LCD (DISPLAY) INDICATION

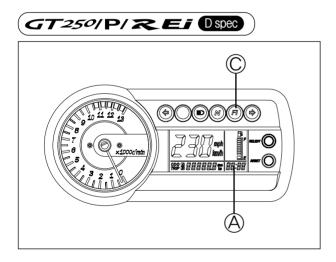
In the clock screen (A), the malfunction code is indicated in order of occurrence.

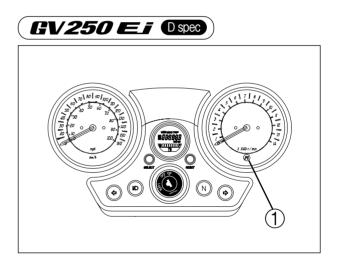
#### **B. "FI" CHECK LAMP INDICATION**

In the "FI" check lamp " (7) " (2), the malfunction code is blinked in order of occurrence.

### 

In the "FI" check lamp " (1), the malfunction code is blinked in order of occurrence.





# **EI SYSTEM TROUBLESHOOTING**

## **CUSTOMER COMPLAINT ANALYSIS**

Record details of the problem (failure, complaint) and how it occurred as described by the customer. For this purpose, use of such an inspection form will facilitate collecting information to the point required for proper analysis and diagnosis.

## **EXAMPLE : CUSTOMER PROBLEM INSPECTION FORM**

User name :	Model :	VIN :	
Date of issue :	Date Reg. :	Date of problem :	Mileage :
"FI" Check lamp	□ Always ON □ Sor	netimes ON 🛛 Always OF	FF   Good condition
Malfunction display / code (LCD panel) or Blinks signal ( "FI" check lamp)	🗆 No code 🛛 Malfun	ction code (    )	
	PROBLEM	SYMPTOMS	
<ul> <li>Difficult Starting</li> <li>No cranking</li> <li>No initial combustion</li> <li>No combustion</li> <li>Poor starting at <ul> <li>(□ cold □ warm</li> </ul> </li> </ul>	□ always)	<ul> <li>Poor Driveability</li> <li>Hesitation on acceleration</li> <li>Back fire / After fire</li> <li>Lack of power</li> <li>Surging</li> <li>Abnormal knocking</li> <li>Engine rpm jumps briefly</li> <li>Other</li> </ul>	
<ul> <li>Poor Idling</li> <li>Poor fast Idle</li> <li>Abnormal idling speed <ul> <li>(□ High □ Low) (</li> <li>Unstable</li> <li>Hunting ( rpm. to</li> <li>Other</li> </ul> </li> <li>OTHERS :</li> </ul>	( rpm) rpm)	<ul> <li>Engine Stall when</li> <li>Immediately after start</li> <li>Throttle valve is opened</li> <li>Throttle valve is closed</li> <li>Load is applied</li> <li>Other</li> </ul>	

MOTORCYCLE / ENVIRONMENTAL CONDITION WHEN PROBLEM OCCURS		
	Environmental condition	
Weather	🗆 Fair 🔲 Cloudy 🔲 Rain 🔲 Snow 🗌 Always 🗌 Other	
Temperature	□ Hot □ Warm □ Cool □ Cold ( °F / °C) □ Always	
Frequency	□ Always □ Sometimes ( times / day, month) □ Only once	
	Under certain condition	
Road	🗆 Urban 🔲 Suburb 🔲 Highway 🗌 Mountainous (🗌 Uphill 🔲 Downhill)	
	🗆 Tarmacadam 🔲 Gravel 🔲 Other	
	Motorcycle condition	
Engine condition	🗆 Cold 🔲 Warming up phase 🔲 Warmed up 🔲 Always 🔲 Other at starting	
	$\Box$ Immediately after start $\Box$ Racing without load $\Box$ Engine speed ( rpm)	
Motorcycle condition	During driving :   Constant speed  Accelerating  Decelerating	
	Right hand corner Left hand corner At stop	
	□ Motorcycle speed when problem occurs ( km/h, Mile/h)	
	□ Other	

NOTE

The above form is a standard sample.

If should be modified according to conditions characteristic of each market.

## SELF-DIAGNOSTIC PROCEDURES

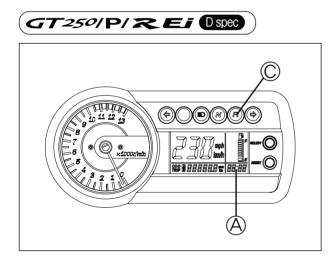
Don't disconnect couplers from ECU, battery cable from battery, ECU ground wire harness from engine or main fuse before confirming malfunction code (self-diagnostic trouble code) stored in memory.

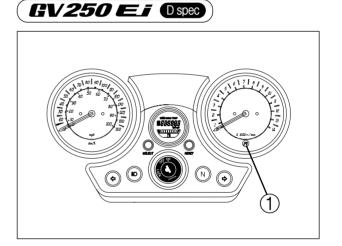
In case of **GT250**(**P**) **Ei DSPED** , the memorized malfunction code is displayed in the code form on the clock screen (A) or with blinks signal of the "FI" check lamp " (P) " (C).

In case of **GV250 I**, the memorized malfunction code is displayed with blinks signal of the "FI" check lamp " **(P**) " (1).

To check malfunction code, read SELF-DIAGNOSIS FUNCTION "DEALER MODE" (Refer to page 29 ~ 39 [4-1-12 ~ 22]) carefully to have good understanding as to what functions are available and how to use it.

Be sure to read "PRECAUTIONS for Electrical Circuit Service" (Refer to page 18 [4-1-1]) before inspection and observe what is written there.

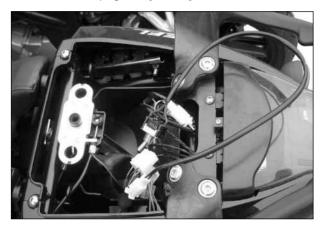






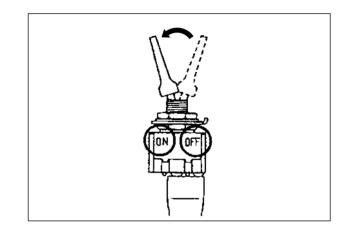
## A. LCD (DISPLAY) INDICATION

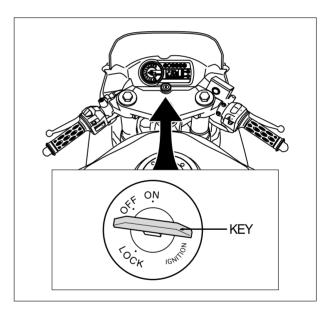
☞ Refer to page 30 [4-1-13]



## **B. "FI" CHECK LAMP INDICATION**

☞ Refer to page 32 [4-1-15]

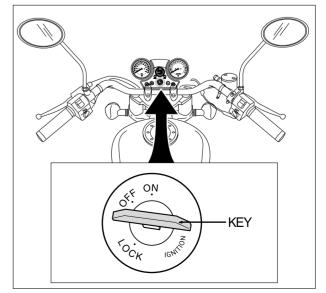






## A. "FI" CHECK LAMP INDICATION

☞ Refer to page 34 [4-1-17]



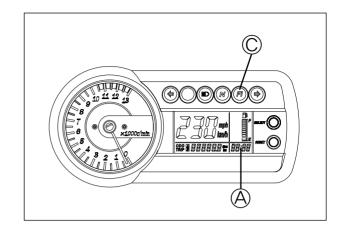
## SELF-DIAGNOSIS RESET PRO-CEDURE

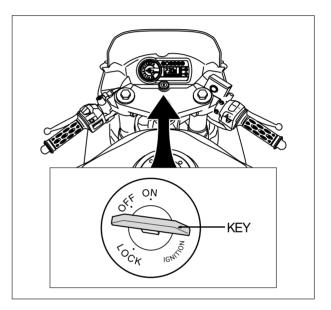
## A. LCD (DISPLAY) PANEL (A)

- After repairing the trouble, refer to page 30 [4-1-13], move to "the malfunction code mode".
- If the clock screen (A) indicates the "noEr" letters, the malfunction codes are cleared.
- Disconnect the special tool from the dealer mode coupler at the wiring harness.

## B. "FI" CHECK LAMP ©

- Repair the trouble.
- Turn the ignition switch to the "OFF" position and return to the "ON" position, and then wait for 10 seconds.
- Repeat the above procedure 30 times.
   In this case, the malfunction codes are cleared.

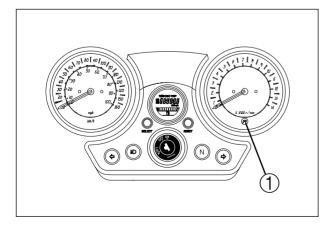


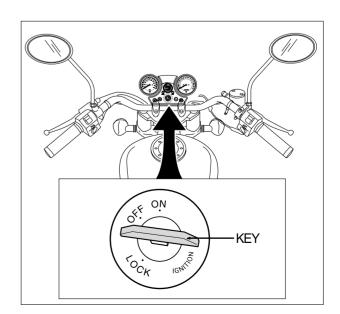


## **GV250 E i Ospec**

## A. "FI" CHECK LAMP ①

- Repair the trouble.
- Turn the ignition switch to the "OFF" position and return to the "ON" position, and then wait for 10 seconds.
- Repeat the above procedure 30 times.
   In this case, the malfunction codes are cleared.





## MALFUNCTION CODE AND DEFECTIVE CONDITION

MALFUNCTION	DETECT	ED ITEM	DETECTED FAILURE CONDITION
CODE			CHECK FOR
noEr	NO FAULT		—
0031		Low Voltage	After engine running, if oxygen sensor heater signal open or is happened the ground short fault for 1 second by 10 times in 12 times test cycle, the code 0031 is indicated.
	NO.1		Oxygen sensor, lead wire / coupler connection.
0032	O₂S heater Circuit	High Voltage	After engine running, if oxygen sensor heater signal is happened the high short fault for 1 second by 10 times in 12 times test cycle, the code 0032 is indicated.
			Oxygen sensor, lead wire / coupler connection.
0037		Low Voltage	After engine running, if oxygen sensor heater signal open or is happened the ground short fault for 1 second by 10 times in 12 times test cycle, the code 0037 is indicated.
	NO.2		Oxygen sensor, lead wire / coupler connection.
0038	O₂S heater Circuit	High Voltage	After engine running, if oxygen sensor heater signal is happened the high short fault for 1 second by 10 times in 12 times test cycle, the code 0038 is indicated.
			Oxygen sensor, lead wire / coupler connection.
0107		Low Voltage or Open	The sensor should produce following voltage. $0.15 V \leq Sensor output voltage$ Without the above range for 2.2 sec. and more, 0107 is indicated.
			Intake air pressure sensor, lead wire / coupler connection.
0108	- IAPS Circuit	High Voltage	The sensor should produce following voltage. Sensor output voltage $\leq 5 \text{ V}$ Without the above range for 10.0 sec. and more, 0108 is indicated.
			Intake air pressure sensor, lead wire / coupler connection.
0112		Low Voltage	The sensor voltage should be the following. $0.1 V \leq Sensor output voltage$ Without the above range for 6.25 sec. and more, 0112 is indicated.
			Intake air temperature sensor, lead wire / coupler connection.
0113	– IATS Circuit	High Voltage or Open	The sensor voltage should be the following. Sensor output voltage $\leq 4.9 \text{ V}$ Without the above range for 6.25 sec. and more, 0113 is indicated.
			Intake air temperature sensor, lead wire / coupler connection.

MALFUNCTION CODE	DETECT	ED ITEM	DETECTED FAILURE CONDITION
0117		Low Voltage	CHECK FORThe sensor voltage should be the following. $0.1 V \leq$ Sensor output voltageWithout the above range for 6.25 sec. and more, 0117 is indicated.
	ETS Circuit		Engine temperature sensor, lead wire / coupler connection.
0118		High Voltage or Open	The sensor voltage should be the following. Sensor output voltage $\leq 5 \text{ V}$ Without the above range for 6.25 sec. and more, 0118 is indicated.
			Engine temperature sensor, lead wire / coupler connection.
0122		Low Voltage or Open	The sensor should produce following voltage. $0.2 V \leq Sensor output voltage$ Without the above range for 7.8 sec. and more, 0122 is indicated.
	TPS Circuit		Throttle position sensor, lead wire / coupler connection.
0123		High Voltage	The sensor should produce following voltage. Sensor output voltage $\leq 4.9$ V Without the above range for 7.8 sec. and more, 0123 is indicated.
			Throttle position sensor, lead wire / coupler connection.
0131		Low Voltage	After engine running, the oxygen sensor signal is inputted in ECU since then 300 sec. In this case, the sensor voltage should be the following. $30 \text{ mV} \leq \text{Sensor output voltage}$ Without the above range for 28.1 sec. and more, 0131 is indicated.
	NO.1		Oxygen sensor, lead wire / coupler connection.
0132	O₂S Circuit	High Voltage	After engine running, the oxygen sensor signal is inputted in ECU since then 300 sec. In this case, the sensor voltage should be the following. Sensor output voltage $\leq 1.0$ V Without the above range for 29.4 sec. and more, 0132 is indicated.
			Oxygen sensor, lead wire / coupler connection.
0137		Low Voltage	After engine running, the oxygen sensor signal is inputted in ECU since then 300 sec. In this case, the sensor voltage should be the following. $30 \text{ mV} \leq \text{Sensor output voltage}$ Without the above range for 28.1 sec. and more, 0137 is indicated.
	NO.2		Oxygen sensor, lead wire / coupler connection.
0138	O₂S Circuit	High Voltage	After engine running, the oxygen sensor signal is inputted in ECU since then 300 sec. In this case, the sensor voltage should be the following. Sensor output voltage $\leq 1.0 \text{ V}$ Without the above range for 29.4 sec. and more, 0138 is indicated.
			Oxygen sensor, lead wire / coupler connection.

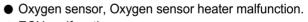
MALFUNCTION CODE	DETECTED ITEM		DETECTED FAILURE CONDITION CHECK FOR		
0201	NO.1 Fuel Injector Circuit Malfunction		After engine running, if NO.1 fuel injector signal open or is happened the high / ground short fault for 1 second by 5 times in 10 times test cycle, the code 0201 is indicated.		
			Injector, wiring / coupler connection, power supply to the injector.		
0202	NO.2 Fuel Injector Circuit Malfunction		After engine running, if NO.2 fuel injector signal open or is happened the high / ground short fault for 1second by 5 times in 10 times test cycle, the code 0202 is indicated.		
			Injector, wiring / coupler connection, power supply to the injector.		
0230		Low Voltage or Open	After engine running, if fuel pump relay signal open or is happened the ground short fault for 1 second by 10 times in 20 times test cycle, the code 0230 is indicated.		
	Fuel pump		Fuel pump relay, connecting lead wire, power source to fuel pump relay, fuel injector.		
0232	relay Circuit	High Voltage	After engine running, if fuel pump relay signal is happened the high short fault for 1 second by 10 times in 20 times test cycle, the code 0232 is indicated.		
			Fuel pump relay, connecting lead wire, power source to fuel pump relay, fuel injector.		
0336				Noisy Signal	After engine running, if the magneto rotor tooth's error is happened continuously by 10 times in 100 times test cycle, the code 0336 is indicated.
	Pick-up coil		Pick-up coil wiring and mechanical parts. (Pick-up coil, lead wire coupler connection)		
0337		No Signal	After engine running, if the pick-up coil signal does not reach ECU for more than 0.5 sec., the code 0337 is indicated.		
			Pick-up coil wiring and mechanical parts. (Pick-up coil, lead wire coupler connection)		
0351	NO.1 IG coil Malfunction		After engine running, if NO.1 ignition coil signal open or is happened the high / ground short fault for 1 second by 5 times in 10 times test cycle, the code 0351 is indicated.		
			Ignition coil, wiring / coupler connection, power supply from the battery.		
0352	NO.2 IG coil Malfunction		After engine running, if NO.2 ignition coil signal open or is happened the high / ground short fault for 1 second by 5 times in 10 times test cycle, the code 0352 is indicated.		
			Ignition coil, wiring / coupler connection, power supply from the battery.		

MALFUNCTION CODE	DETECTED ITEM		DETECTED FAILURE CONDITION CHECK FOR	
0444		Open	After engine running, if purge control valve signal open or is happened the ground short fault for 1 second by 10 times in 12 times test cycle, the code 0444 is indicated.	
	PV Circuit (California		Purge control valve, wiring / coupler connection, power supply from the battery.	
0445	model only)	`		After engine running, if purge control valve signal is happened the high short fault for 1 second by 10 times in 12 times test cycle, the code 0445 is indicated.
			Purge control valve, wiring / coupler connection, power supply from the battery.	
0505	ISC Error		After engine running, if idle speed is different to 500 rpm from the specified range in 25 seconds test cycle, the code 0505 is indicated.	
			Idle speed control solenoid, wiring / coupler connection.	
0562		Low	The battery voltage should be the following. 9 V $\leq$ Battery voltage Without the above range for 3.125 sec. and more, 0562 is indicated.	
	Battery		Battery, wiring / coupler connection to ECU.	
0563	Voltage	High	The battery voltage should be the following. Battery voltage $\leq 16$ V Without the above range for 3.125 sec. and more, 0563 is indicated.	
			Battery, wiring / coupler connection to ECU.	
0650	"FI" check lamp Circuit Malfunction		After engine running, if "FI" check lamp signal open or is happened the high / ground short fault for 1 second by 40 times in 80 times test cycle, the code 0650 is indicated.	
			"FI" check lamp, wiring / coupler connection.	
0850	GP or Clutch lever Switch Circuit Malfunction		If gear position or clutch lever switch signal feedback is not active in continuous by 20 times in fully power down cycles, the code 0850 is indicated. (Fully power down cycle : Ignition switch "ON" → "OFF" position)	
			Gear position or clutch lever switch, wiring / coupler connection, gearshift cam etc.	

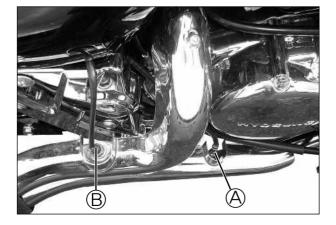
"0031", "0032", "0037" or "0038"

## OXYGEN SENSOR HEATER CIRCUIT MALFUNCTION & "0131", "0132", "0137" or "0138" OXYGEN SENSOR CIRCUIT MALFUNCTION

LCD (DISPLAY) INDICATION	"FI" CHECK LAMP INDICATION
0031	$ \begin{bmatrix} 0 & 0 & 0 & 3 & 1 & 0 & 0 & 3 & 1 \end{bmatrix} $
0032	
0037	$\left  \begin{array}{c cccccccccccccccccccccccccccccccccc$
0038	
0131	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$
0132	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
0137	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
0138	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0$
DETECTED CONDITIO	N POSSIBLE CAUSE
☞ Refer to page 45, 46 [4-1-28, 29]	<ul> <li>Oxygen sensor, Oxygen sensor heater circuit open or short.</li> <li>Oxygen sensor oxygen sensor heater malfunction</li> </ul>



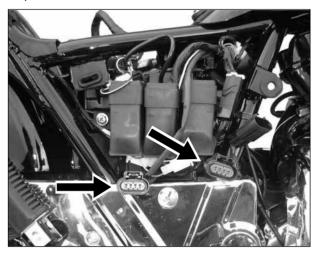
• ECU malfunction.



※ ▲ : NO.1 O₂S
 B : NO.2 O₂S

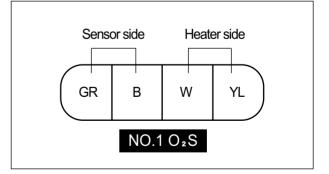
## INSPECTION

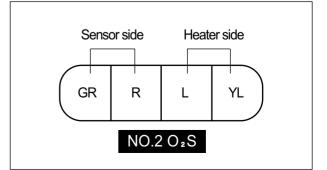
- 1) Remove the front seat and frame cover.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Check the Oxygen sensor coupler for loose or poor contacts.





(G5) G4 Ŕ7 G9 G1 В9 B1 B18 В10 G18 G10 (817) (810) Gray Black ECU Coupler





#### Is OK?

YES	<ul> <li>B or GR (NO.1 O<sub>2</sub>S) / R or GR (NO.2 O<sub>2</sub>S) wire open or shorted to ground, or poor BT or BT (NO.1 O<sub>2</sub>S) / G or BT (NO.1 O<sub>2</sub>S) / G or BT (NO.2 O<sub>2</sub>S) connection of ECU coupler. [Sensor side]</li> <li>W (NO.1 O<sub>2</sub>S heater) / L (NO.2 O<sub>2</sub>S heater) wire open or shorted to ground, or poor BT (NO.1 O<sub>2</sub>S heater) / C (NO.2 O<sub>2</sub>S heater) / G (NO.2 O<sub>2</sub>S heater)</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	Replace the Oxygen sensor with a new one.

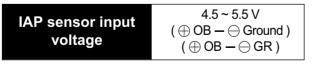
## "0107" or "0108" IAP SENSOR CIRCUIT MALFUNCTION

LCD (DISPLAY) INDICATION	<b>"FI" CHECK LAMP INDICATION</b>
0107	
0108	

DETECTED CONDITION	POSSIBLE CAUSE
☞ Refer to page 45 [4-1-28]	<ul> <li>Clogged vacuum passage between throttle body and IAP sensor.</li> </ul>
NOTE : Note that atmospheric pressure varies depending on weather conditions as well as altitude. Take that into consideration when inspecting voltage.	<ul> <li>Air being drawn from vacuum passage between throttle body and IAP sensor.</li> <li>IAP sensor circuit open or shorted to ground.</li> <li>IAP sensor malfunction.</li> <li>ECU malfunction.</li> </ul>
<ul> <li>INSPECTION</li> <li>Step 1</li> <li>Remove the fuel tank.</li> <li>Turn the ignition switch to the "OFF" position.</li> <li>Check the IAP sensor coupler (1) for loose or poor contacts.</li> <li>If OK, then measure the IAP sensor input voltage.</li> </ul>	

- 4) Disconnect the IAP sensor coupler 2.
- 5) Turn the ignition switch to the "ON" position.
- 6) Measure the input voltage at the OB wire and ground.

If OK, then measure the input voltage at the OB wire and GR wire.



Tester knob indication : Voltage (\_\_\_\_)

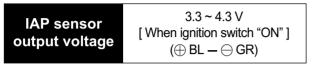
Is the input voltage OK?

YES	Go to Step 2.
NO	<ul> <li>Loose or poor contacts on the ECU coupler.</li> <li>Open or short circuit in the OB wire or GR wire.</li> </ul>



### Step 2

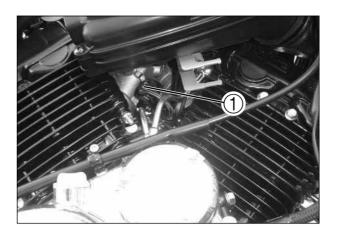
- 1) Connect the IAP sensor coupler ①.
- 2) Insert the needle pointed probes to the lead wire coupler.
- 3) Turn the ignition switch to the "ON" position.
- 4) Measure the IAP sensor output voltage at the wire side coupler (between BL and GR wires).

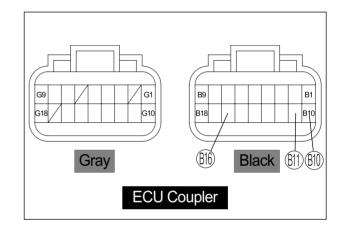


Tester knob indication : Voltage (==)

Is the output voltage OK?

YES	<ul> <li>OB, BL or GR wire open or shorted to ground, or poor (B), (B) or (B) connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	If check result is not satisfactory, replace the IAP sensor with a new one.





Output voltage (Input voltage 5 V, ambient temp. 25 °C, 77 °F)				
	ALTITUDE (Reference)		ATMOSPHERIC PRESSURE	
(ft)	(m)	(mmHg)	kPa	(V)
0   2 000	0   610	760   707	100   94	Approx. 3.7 ~ 3.9
2 001   5 000	611   1 524	707   634	94   85	Approx. 3.3 ~ 3.7
5 001   8 000	1 525   2 438	634   567	85   76	Approx. 3.0 ~ 3.3
8 001   10 000	2 439   3 048	567   526	76   70	Approx. 2.7 ~ 3.0

## "0112" or "0113" IAT SENSOR CIRCUIT MALFUNCTION



## DETECTED CONDITION

### **POSSIBLE CAUSE**

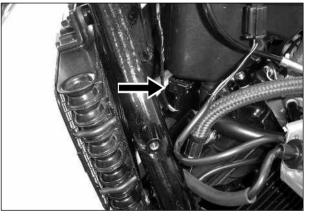
☞ Refer to page 45 [4-1-28]

- IAT sensor circuit open or short.
- IAT sensor malfunction.
- ECU malfunction.

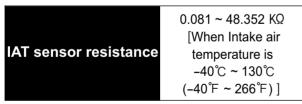
## INSPECTION

- 1) Remove the fuel tank.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Check the IAT sensor coupler for loose or poor contacts.

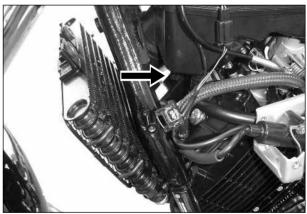
If OK, then measure the IAT sensor resistance.

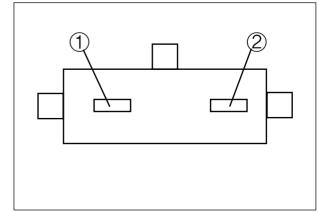


- 4) Disconnect the IAT sensor coupler.
- 5) Measure the resistance between the terminals and .

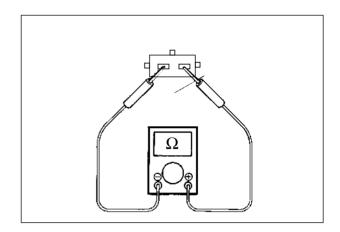


Tester knob indication : Resistance (KΩ)





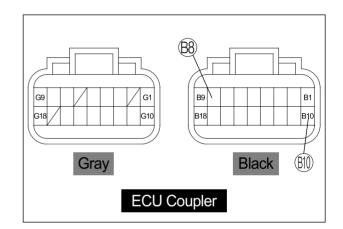
IAT sensor resistance		
Intake Air Temp.	Resistance	
-40 ℃ (-40 °F)	44.642 KΩ ± 5%	
-20 ℃ (-4 °F)	14.958 KΩ ± 5%	
0 °C (32 °F)	5.734 KΩ ± 5%	
20 °C (68 °F)	2.438 KΩ ± 5%	
40 °C (104 °F)	1.141 KΩ ± 5%	
60 ℃ (140 °F)	0.579 KΩ ± 5%	
80 °C (176 °F)	0.315 KΩ ± 5%	
100 ℃ (212 °F)	0.182 KΩ ± 5%	
120 ℃ (248 °F)	0.111 KΩ ± 5%	
130 ℃ (266 °F)	0.088 KΩ ± 5%	



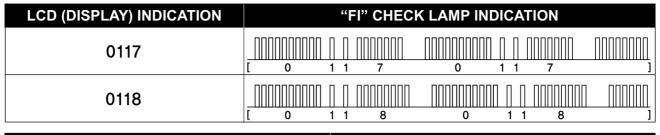
العناقة Tester knob indication : Resistance (KQ)

Is the resistance OK?

YES	<ul> <li>Lg or GR wire open or shorted to ground, or poor (B) or (B) or (B) connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	Replace the IAT sensor with a new one.



## "0117" or "0118" ET SENSOR CIRCUIT MALFUNCTION



## **DETECTED CONDITION**

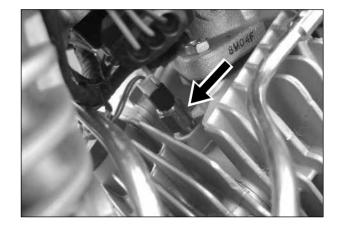
### POSSIBLE CAUSE

Refer to page 46 [4-1-29]

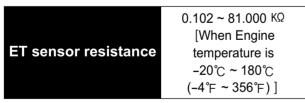
- ET sensor circuit open or short.
- ET sensor malfunction.
- ECU malfunction.

## INSPECTION

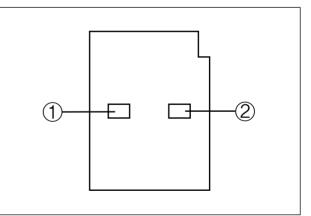
- 1) Turn the ignition switch to the "OFF" position.
- 2) Check the ET sensor coupler for loose or poor contacts.
  - If OK, then measure the ET sensor resistance.



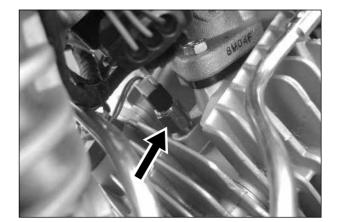
- 3) Disconnect the ET sensor coupler.
- 4) Measure the resistance between the terminals (1) and (2) of the ET sensor.



**Indication : Resistance (KQ)** 



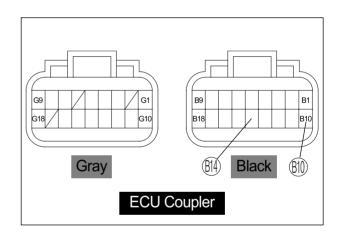
ET sensor resistance		
Engine Temp.	Resistance (To ECU)	
-20 ℃ (-4 °F)	Approx. 75.5 KΩ	
0 °C (32 °F)	Approx. 28.7 KΩ	
20 °C (68 °F)	Approx. 12.2 KΩ	
40 °C (104 °F)	Approx. 5.6 KΩ	
60 °C (140 °F)	Approx. 2.8 KΩ	
80 °C (176 °F)	Approx. 1.5 KΩ	
120 °C (248 °F)	Approx. 0.5 KΩ	
140 °C (284 °F)	Approx. 0.3 KΩ	
160 ℃ (320 °F)	Approx. 0.2 KΩ	
180 ℃ (356 °F)	Approx. 0.13 KΩ	



العندية Tester knob indication : Resistance (KQ)

Is the resistance OK?

YES	<ul> <li>G or GR wire open or shorted to ground, or poor (B14) or (B10) connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	Replace the ET sensor with a new one.



## "0122" or "0123" TP SENSOR CIRCUIT MALFUNCTION

LCD (DISPLAY) INDICATION	<b>"FI" CHECK LAMP INDICATION</b>
0122	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
0123	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$

## **DETECTED CONDITION**

### POSSIBLE CAUSE

Refer to page 46 [4-1-29]

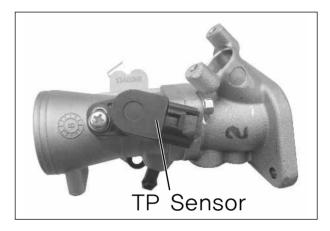
- TP sensor circuit open or short.
- TP sensor malfunction.
- ECU malfunction.

## **INSPECTION**

#### Step 1

- 1) Turn the ignition switch to the "OFF" position.
- 2) Check the TP sensor coupler for loose or poor contacts.

If OK, then measure the TP sensor input voltage.



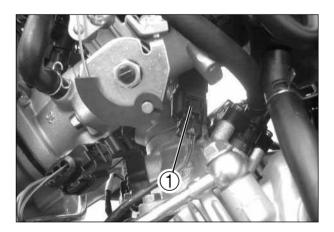
- 3) Disconnect the TP sensor coupler (1).
- 4) Turn the ignition switch to the "ON" position.
- 5) Measure the voltage at the OB wire and ground.
- 6) If OK, then measure the voltage at the OB wire and GR wire.



Tester knob indication : Voltage (\_\_\_)

Is the input voltage OK?

YES	Go to Step 2.
NO	<ul> <li>Loose or poor contacts on the ECU coupler.</li> <li>Open or short circuit in the OB wire or GR wire.</li> </ul>



### 4-1-41 EI SYSTEM DIAGNOSIS

#### Step 2

- 1) Remove the frame cover.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Disconnect the TP sensor coupler.
- 4) Check the continuity between (LY) and ground.

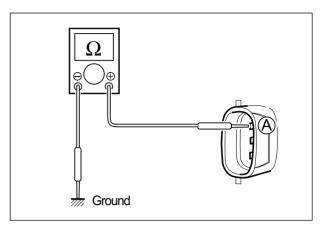
## **TP** sensor continuity

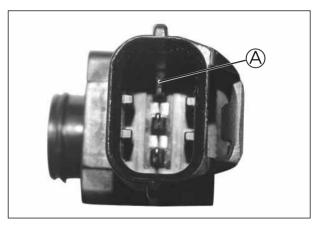
 $\infty \Omega$  (Infinity) (A) - Ground)

**Tester knob indication : Resistance (** $\Omega$ **)** 

Is the continuity OK?

YES	Go to Step 3.
NO	Replace the TP sensor with a new one.



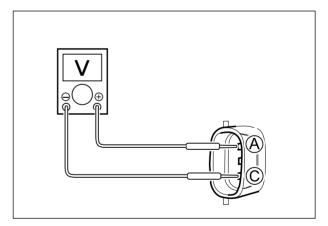


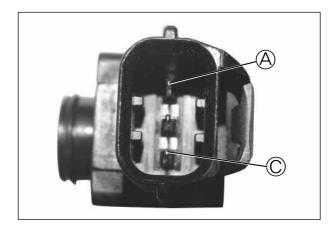
#### Step 3

- 1) Connect the TP sensor coupler.
- 2) Insert the needle pointed probes to the lead wire coupler.
- 3) Turn the ignition switch to the "ON" position.
- Measure the TP sensor output voltage at the coupler [between  $\triangle$  ( $\oplus$  : LY) and  $\bigcirc$  ( $\ominus$  : GR)] by turning the throttle grip.

TP sensor output voltage	
Throttle valve is closed	Approx. 1.07 ~ 1.17 V
Throttle valve is opened	Approx. 4.30 ~ 4.70 V

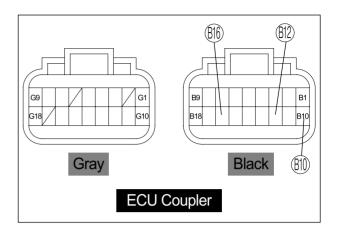
€ Tester knob indication : Voltage (===)





Is the output voltage OK?

YES	<ul> <li>OB, LY or GR wire open or shorted to ground, or poor (B) , (B) or (B) connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	If check result is not satisfactory, replace the TP sensor with a new one.



## "0201" or "0202" FUEL INJECTOR CIRCUIT MALFUNCTION

LCD (DISPLAY) INDICATION	<b>"FI" CHECK LAMP INDICATION</b>
0201	
0202	

## DETECTED CONDITION

### **POSSIBLE CAUSE**

- Injector circuit open or short.
- Injector malfunction.
  - ECU malfunction.

## **INSPECTION**

■ Refer to page 47 [4-1-30]

### Step 1

- 1) Remove the fuel tank and frame cover.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Check the injector couplers NO.1 (1) and NO.2 (2) for loose or poor contacts.

If OK, then measure the injector resistance.

※ A : NO.1 FUEL INJECTOR
 B : NO.2 FUEL INJECTOR

4) Disconnect the injector couplers NO.1 ① and NO.2 ② and measure the resistance between terminals.

**Tester knob indication : Resistance (** $\Omega$ **)** 

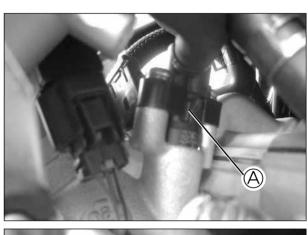
5) If OK, then check the continuity between injector terminals and ground.

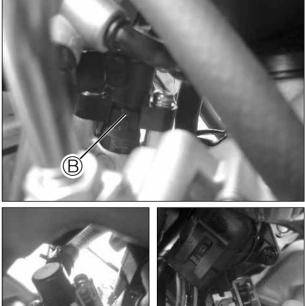
Injector continuity $\infty \Omega$ (Infir
--

**Tester knob indication : Resistance (** $\Omega$ **)** 

Are the resistance and continuity OK?

YES	Go to Step 2
NO	Replace the Injector with a new one.





## Step 2

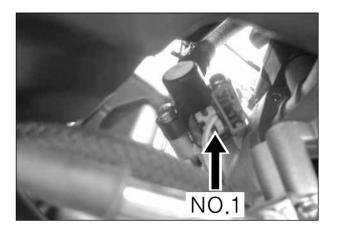
- 1) Turn the ignition switch to the "ON" position.
- 2) Measure the injector voltage between YL(NO.1 & NO.2) wire and ground.

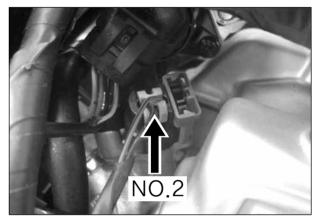
Injector voltage	(
------------------	---

Battery voltage  
([NO.1] 
$$\oplus$$
 YL –  $\ominus$  Ground,  
[NO.2]  $\oplus$  YL –  $\ominus$  Ground )

## NOTE

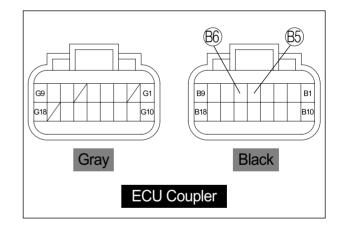
Injector voltage can be detected only 3 seconds after ignition switch is turned "ON" position.





### Is the voltage OK?

YES	<ul> <li>YR(NO.1), RB(NO.2) wire open or shorted to ground, or poor (B5) (NO.1), (B6) (NO.2) connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	Inspect the fuel pump or fuel pump relay. (Refer to page 79 [4-2-4])



## "0230" or "0232" FUEL PUMP RELAY CIRCUIT MALFUNCTION

LCD (DISPLAY) INDICATION	<b>"FI" CHECK LAMP INDICATION</b>		
0230	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		
0232	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		

## **DETECTED CONDITION**

### POSSIBLE CAUSE

Refer to page 47 [4-1-30]

- Fuel pump relay circuit open or short.
- Fuel pump relay malfunction.
- ECU malfunction.

# **GV250 E j Ospec**

#### ■ INSPECTION

- 1) Remove the frame cover.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Check the fuel pump relay coupler for loose or poor contacts.

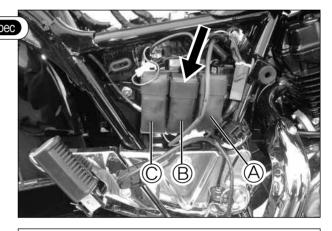
If OK, then check the insulation and continuity. Refer to page 79 [4-2-4] for details.

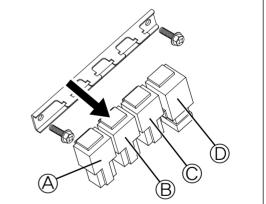
- \* (A): Head lamp relay
  - B: Fuel pump relay
  - C : Main relay
  - **D**: Turn signal relay

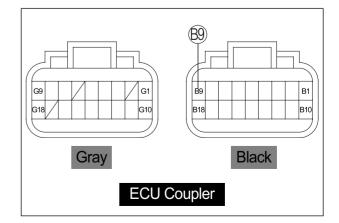
GT250/P/REiOspec



YES	<ul> <li>GW wire open or shorted to ground, or poor (B) connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> <li>Inspect the fuel injectors. (Refer to page 60 [4-1-43])</li> </ul>
NO	Replace the fuel pump relay with a new one.







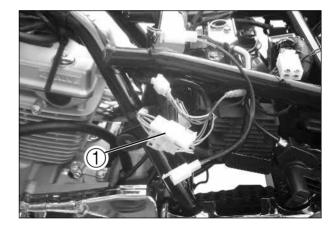
## "0336" or "0337" PICK-UP COIL CIRCUIT MALFUNCTION

LCD (DISPLAY) INDICATION	<b>"FI" CHECK LAMP INDICATION</b>		
0336	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 $		
0337	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		

DETECTED CONDITION	POSSIBLE CAUSE
I≊ Refer to page 47 [4-1-30]	<ul> <li>Metal particles or foreign materiel being attached on the pick-up coil and rotor tip.</li> <li>Pick-up coil circuit open or short.</li> <li>Pick-up coil malfunction.</li> <li>ECU malfunction.</li> </ul>

## INSPECTION

- 1) Remove the frame cover.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Check the pick-up coil coupler ① for loose or poor contacts.
  - If OK, then measure the pick-up coil resistance.



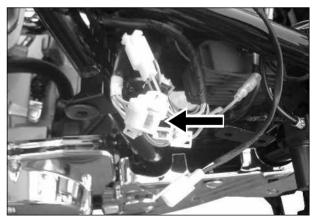
4) Disconnect the pick-up coil coupler ① and measure the resistance.

Pick-up coil resistance	Approx. 85 ~ 105 Ω (G - L)
Tester knob indication : Resistance ( $\Omega$ )	

5) If OK, then check the continuity between each terminal and ground.

Pick-up coil continuity	$\infty \Omega$ (Infinity) (G – Ground) (L – Ground)
	, ,

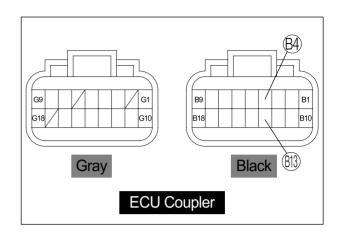
 $\mathbb{Q}$  Tester knob indication : Resistance ( $\Omega$ )



## 4-1-47 EI SYSTEM DIAGNOSIS

Are the resistance and continuity OK?

YES	<ul> <li>L or G wire open or shorted to ground, or poor (Bi3) or (B4) connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	<ul> <li>Loose or poor contacts on the pick- up coil coupler or ECU coupler.</li> <li>Replace the pick-up coil with a new one.</li> </ul>



## "0351" or "0352" IGNITION COIL MALFUNCTION

Refer to the IGNITION COIL for details.(See page 89 ~ 90 [5-5-1 ~ 2])

LCD (DISPLAY) INDICATION	"FI" CHECK LAMP INDICATION		
0351			
	[ 0 3 5 1 0 3 5 1	]	
0352	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0$		

## "0444" or "0445" PURGE CONTROL VALVE CIRCUIT MALFUNCTION (California model only)

LCD (DISPLAY) INDICATION	"FI" CHECK LAMP INDICATION
0444	
0445	$ \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \begin{bmatrix} 0 \\ 4 \end{bmatrix} \begin{bmatrix} 0 \\ 4 \end{bmatrix} \begin{bmatrix} 0 \\ 4 \end{bmatrix} \begin{bmatrix} 0 \\ 5 \\ 0 \end{bmatrix} \begin{bmatrix} 0 \\ 4 \end{bmatrix} \begin{bmatrix} 0 \\ 4 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \end{bmatrix} \begin{bmatrix} 0 \\$

DETECTED CONDITION	POSSIBLE CAUSE
	<ul> <li>PV circuit open and short.</li> </ul>
Refer to page 48 [4-1-31]	• PV malfunction.
	ECU malfunction.

## INSPECTION

- 1) Remove the frame cover.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Check the PV coupler for loose or poor contacts.
- 4) Disconnect the PV coupler and measure the resistance.

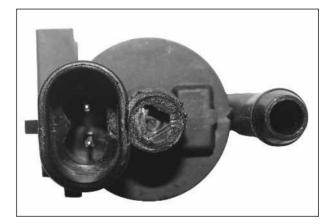


 $\square$  Tester knob indication : Resistance ( $\Omega$ )

5) If OK, then check the continuity between each terminal and ground.

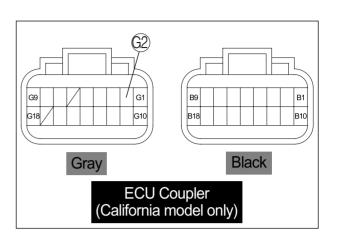


 $\mathbb{R}$  Tester knob indication : Resistance (  $\Omega$  )

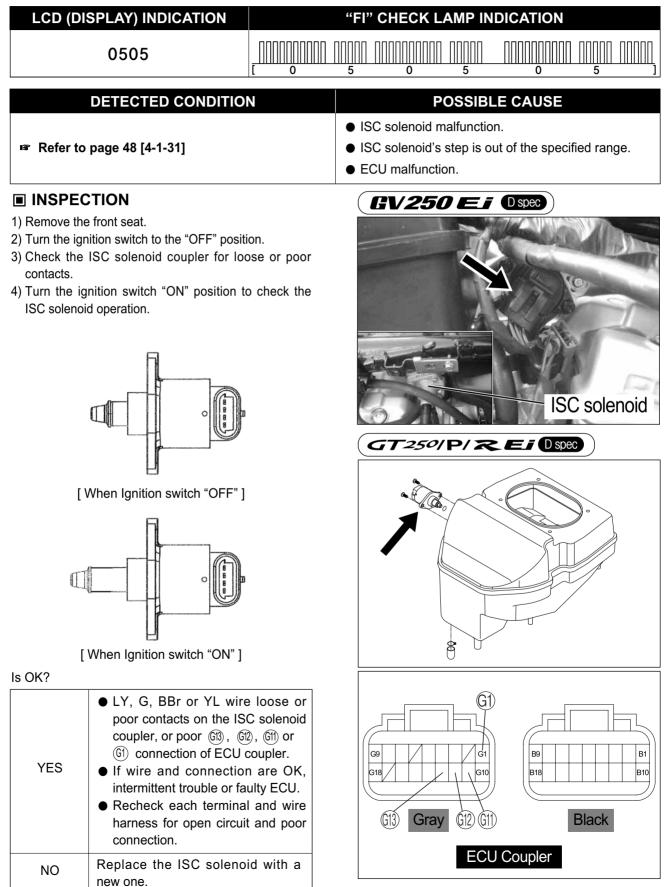


Are the resistance and continuity OK?

YES	<ul> <li>GW wire open or shorted to ground, or poor © connection of ECU coupler.</li> <li>YL coupler open or shorted to the wiring harness.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	Replace the purge control valve with a new one.



## "0505" ISC SOLENOID RANGE ABNORMAL



## "0562" or "0563" BATTERY VOLTAGE MALFUNCTION

LCD (DISPLAY) INDICATION	<b>"FI" CHECK LAMP INDICATION</b>
0562	
0563	

DETECTED CONDITION	POSSIBLE CAUSE
	<ul> <li>Battery voltage circuit open and short.</li> </ul>
Is Refer to page 48 [4-1-31]	<ul> <li>Battery malfunction.</li> </ul>
	● ECU malfunction.

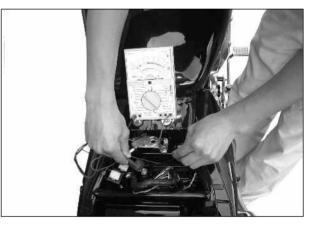
## INSPECTION

- 1) Remove the front seat.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Using the pocket tester, measure the DC voltage between the battery (+) and (-) terminal.

Battery voltage	
-----------------	--

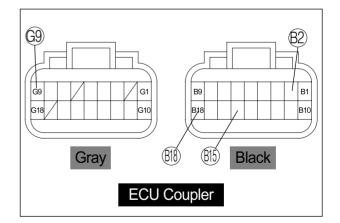
11 ~ 16 V

Tester knob indication : Voltage (\_\_\_)



Is the battery voltage OK?

YES	<ul> <li>OB, BW, BW or RB wire open or shorted to ground, or poor (15), (69), (82) or (818) connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	Replace the battery with a new one.



## "0650" "FI" CHECK LAMP CIRCUIT MALFUNCTION

LCD (DISPLAY) INDICATION

# **"FI" CHECK LAMP INDICATION**

#### 

### **DETECTED CONDITION**

Refer to page 48 [4-1-31]

## **POSSIBLE CAUSE**

- "FI" check lamp circuit open and short.
- "FI" check lamp malfunction.
- ECU malfunction.

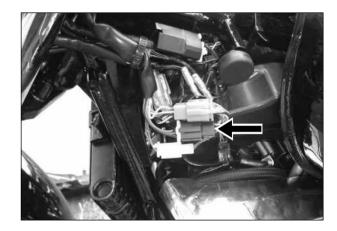
## ■ INSPECTION

- 1) Remove the frame cover.
- 2) Turn the ignition switch to the "OFF" position.
- 3) Disconnect the instrument panel lead wires.

#### 4-1) GV250 E Dspec

Connect the battery  $\oplus$  terminal to the R (2 pins coupler) wire and O (9 pins coupler) wire of the instrument panel and the battery  $\ominus$  terminal to the BW (9 pins coupler) wire of the instrument panel.

And then connect the LY (2 pins coupler) wire of the instrument panel to the battery  $\bigcirc$  terminal directly.



4-2) GT-250 REI Dspec

Connect the battery  $\oplus$  terminal to the R (1 pins coupler) wire and O (9 pins coupler) wire of the instrument panel and the battery  $\ominus$  terminal to the BW (3 pins coupler) wire of the instrument panel.

And then connect the LY (9 pins coupler) wire of the instrument panel to the battery  $\ominus$  terminal directly.

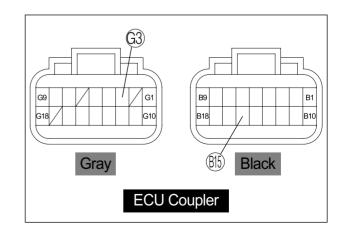
#### 4-3) GT250 PEI DSpec & GT250 EI DSpec

Connect the battery  $\oplus$  terminal to the R (3 pins coupler) wire and O (9 pins coupler) wire of the instrument panel and the battery  $\ominus$  terminal to the BW (9 pins coupler) wire of the instrument panel.

And then connect the LY (3 pins coupler) wire of the instrument panel to the battery  $\ominus$  terminal directly.

Is the "FI" check lamp lit?

YES	<ul> <li>LY or OB wire open or shorted to ground, or poor G3 or B15 connection of ECU coupler.</li> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	Replace the instrument panel with a new one.



0

## **"0850" GP or CLUTCH LEVER SWITCH CIRCUIT MALFUNCTION**

0850

LCD (DISPLAY) INDICATION

## **"FI" CHECK LAMP INDICATION**

[ 0

## POSSIBLE CAUSE

- GP switch circuit open or short.
- GP switch malfunction.

5

• Clutch lever switch circuit open or short.

0

- Clutch lever switch malfunction.
- ECU malfunction.

8

## INSPECTION

1) Remove the frame cover.

■ Refer to page 48 [4-1-31]

- 2) Turn the ignition switch to the "OFF" position.
- 3) Check the GP switch and clutch lever switch coupler for loose or poor contacts.If OK, then measure the GP switch and the clutch

**DETECTED CONDITION** 

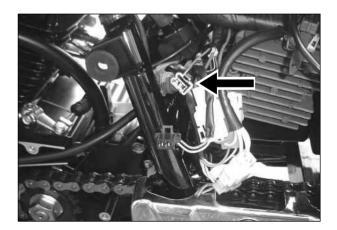
If OK, then measure the GP switch and the clutch lever switch resistance.

- 4) Park the motorcycle on a firm, flat surface vertically.
- 5) Disconnect the GP switch coupler ① and then check the continuity between L wire and ground when gearshift lever is shifted from the neutral state.

**GP** switch continuity

0 Ω (L – Ground)

**Tester knob indication : Resistance (** $\Omega$ **)** 

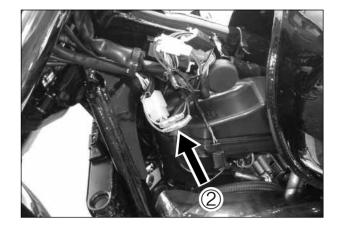


#### 4-1-55 EI SYSTEM DIAGNOSIS

6) Disconnect the clutch lever switch coupler ② and then check the continuity between GR wire and Br wire when the squeezing the clutch lever.

Clutch lever	0 Ω
switch continuity	(GR – Br)

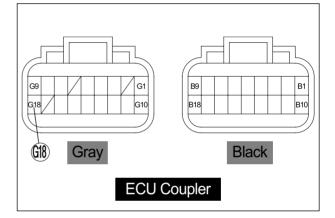
🖳 Tester knob indi	ation : Resistance ( $\Omega$ )
--------------------	---------------------------------



7) Measure the voltage between (18) of the ECU and the LY wire of the wiring harness's GP switch coupler, and measure the voltage between (18) of the ECU and the GR wire of the wiring harness's clutch lever switch coupler.

If the measurement is out of 0.4  $\sim$  0.7 V, replace the DIODE #3 with a new one

#### 📰 Tester knob indication : Diode test (+-)



#### Is OK?

YES	<ul> <li>If wire and connection are OK, intermittent trouble or faulty ECU.</li> <li>Recheck each terminal and wire harness for open circuit and poor connection.</li> </ul>
NO	Replace the GP switch or Clutch lever switch with a new one.

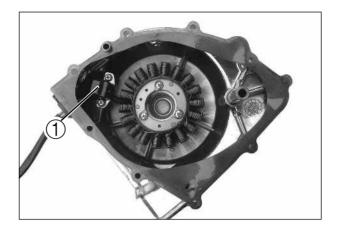
# SENSORS

## ● PICK-UP COIL INSPECTION

The pick-up coil ① is installed in the magneto cover. (Refer to page 63 [4-1-46])

#### PICK-UP COIL REMOVAL AND INSTALLATION

- Remove the magneto cover.
- Install the magneto cover in the reverse order of removal.

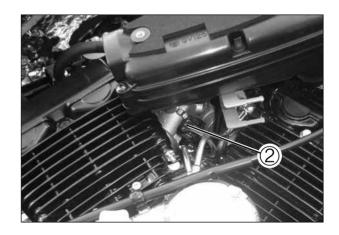


## **● IAP SENSOR INSPECTION**

The intake air pressure (IAP) sensor ② is installed at the rear intake pipe. (Refer to page 51 [4-1-34])

#### ● IAP SENSOR REMOVAL AND INSTALLATION

- Remove the fuel tank.
- Remove the IAP sensor from the rear intake pipe.
- Install the IAP sensor in the reverse order of removal.



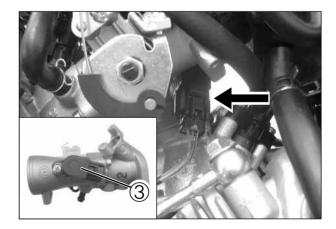
## **●** TP SENSOR INSPECTION

The throttle position (TP) sensor 3 is installed at the front throttle body. (Refer to page 57 [4-1-40])

### • TP SENSOR REMOVAL AND INSTALLATION

# 

Never remove or adjust the TP sensor.



### • ET SENSOR INSPECTION

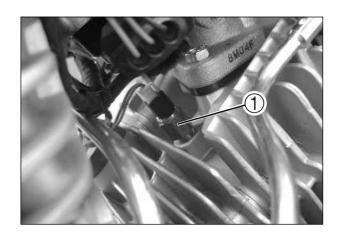
The engine temperature (ET) sensor ① is installed at the front cylinder. (Refer to page 55 [4-1-38])

#### • ET SENSOR REMOVAL AND INSTALLATION

• Remove the ET sensor.

Install the ET sensor in the reverse order of removal.

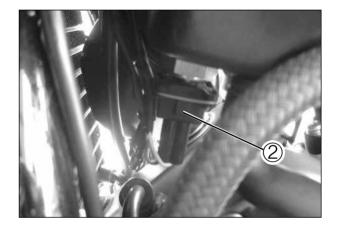
ET sensor :  $5 \sim 8 \text{ N} \cdot \text{m} (0.5 \sim 0.8 \text{ kgf} \cdot \text{m})$ 



### ● IAT SENSOR INSPECTION

The intake air temperature (IAT) sensor ② is installed at the downside of the air cleaner case. (Refer to page 53 [4-1-36])

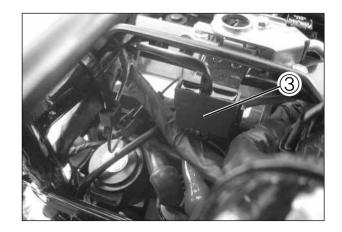
- IAT SENSOR REMOVAL AND INSTALLATION
- Remove the fuel tank.
- Remove the IAT sensor from the air cleaner case.
- Install the IAT sensor in the reverse order of removal.



#### RO SWITCH REMOVAL AND INSTALLATION

The roll over (RO) switch ③ is located in the downside of the front seat striker.

- Romove the front seat.
- Remove the RO switch from the frame.
- Install the RO switch in the reverse order of removal.



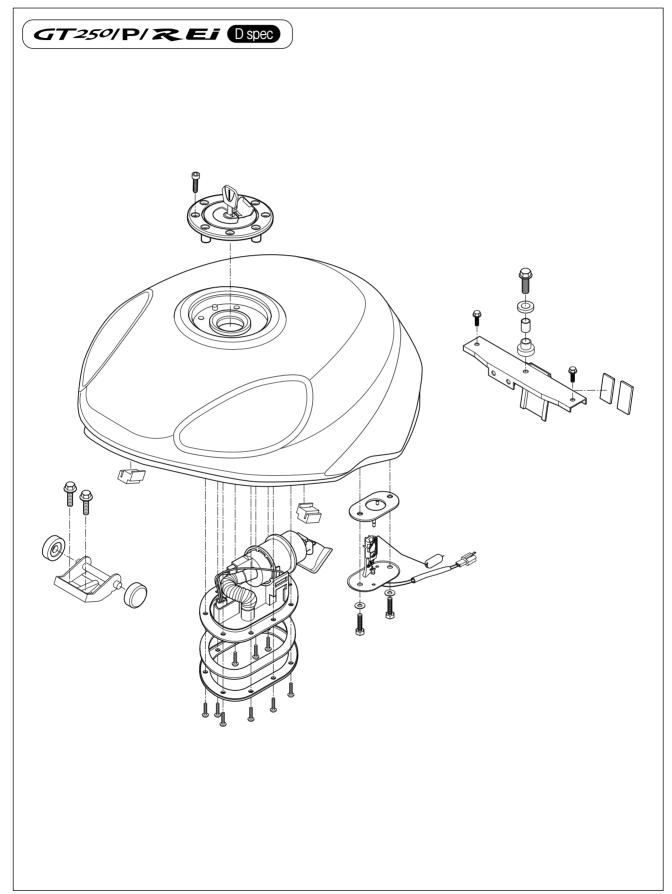
# FUEL SYSTEM AND THROTTLE BODY

CONTENTS —	
FUEL SYSTEM	76 [4-2-1]
REMOVAL AND DISASSEMBLY	77 [4-2-2]
REASSEMBLY AND INSTALLATION	78 [4-2-3]
FUEL PRESSURE INSPECTION	79 [4-2-4]
FUEL PUMP RELAY INSPECTION	79 [4-2-4]
FUEL MESH FILTER INSPECTION AND CLEANING	80 [4-2-5]
FUEL GAUGE INSPECTION	80 [4-2-5]
THROTTLE BODY	81 [4-2-6]
REMOVAL ·····	82 [4-2-7]
CLEANING ·····	83 [4-2-8]
INSPECTION	83 [4-2-8]
INSTALLATION	84 [4-2-9]

# 

Gasoline must be handled carefully in an area well ventilated and away from fire or spark.

# **FUEL SYSTEM**



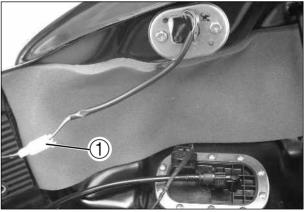
## **REMOVAL AND DISASSEMBLY**

• Remove the front seat.

• Remove the fuel tank mounting bolts and take off the hooks.

• Disconnect the fuel gauge coupler ①.

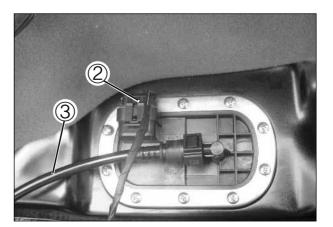




- Disconnect the fuel pump coupler ②.
- Remove the fuel injector hose ③.

# $\triangle$ CAUTION

After disconnecting the fuel injector hose ③, insert a blind plug into the end to stop fuel leakage.



#### 4-2-3 FUEL SYSTEM AND THROTTLE BODY

• Remove the fuel tank rearward.

## **▲ CAUTION**

As gasoline leakage may occur in this operation, keep away from fire and sparks.

 Remove the fuel pump assembly ① by removing its mounting bolts diagonally.

## **WARNING**

♦ Gasoline is highly flammable and explosive.

Keep heat, spark and flame away.

• Remove the fuel gauge ②.

### **REASSEMBLY AND INSTALLATION**

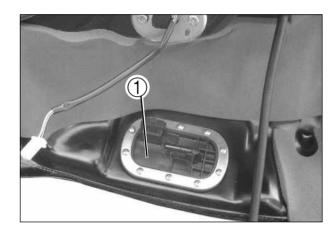
Reassembly and installation the fuel tank in the reverse order of removal and disassembly.

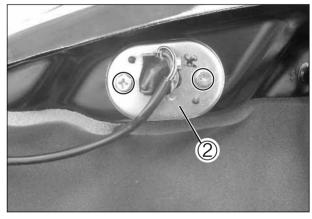
• When installing the fuel pump assembly, first tighten all the fuel pump assembly mounting bolts lightly in diagonal stages, and then tighten them in the above tightening order.

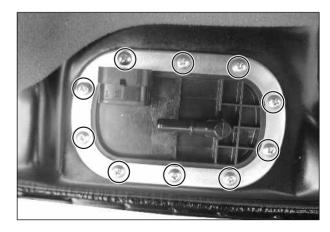
### NOTE

Apply a small quantity of the THREAD LOCK to the thread portion of the fuel pump mounting bolt.

HIREAD LOCK







## FUEL PRESSURE INSPECTION

- Remove the front seat.
- Place a rag under the fuel injector hose.
- Disconnect the fuel injector hose from the fuel hose joint.
- Install the special tool between the fuel tank and fuel hose joint.

#### Fuel pump pressure gauge : 09915-54510

Turn the ignition switch to the "ON" position and check the fuel pressure.

 
 Fuel pressure of fuel pump
 Approx. 2.25 ~ 2.50 kgf/cm<sup>2</sup>

 (220 ~ 245 kPa, 32.0 ~ 35.6 psi)

If the fuel pressure is lower than the specification, inspect the following items :

- \* Fuel hose leakage
- \* Clogged fuel filter
- \* Pressure regulator
- \* Fuel pump

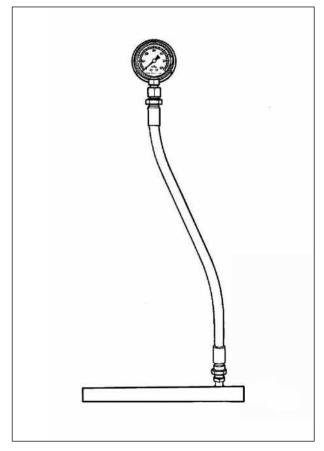
If the fuel pressure is higher than the specification, inspect the following items :

- \* Fuel pump check valve
- \* Pressure regulator

# 

- Before removing the special tool, turn the ignition switch to the "OFF" position and release the fuel pressure slowly.
- Gasoline is highly flammable and explosive. Keep heat, sparks and flame away.





## FUEL PUMP RELAY INSPECTION

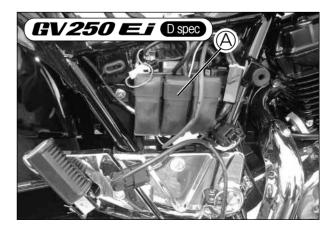
**GV250 E D** spec \_'s fuel pump relay is located inside the right side cover, and

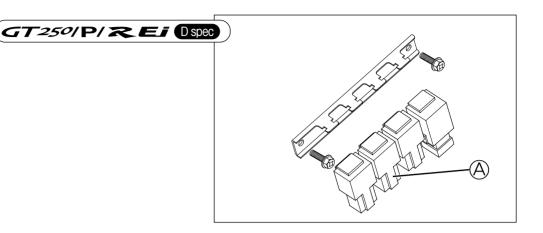
" GT250/P/REI DSpec ]'s fuel pump relay is located inside the right side cover.

• Remove the right side cover.

( GV250 E i Dspec )

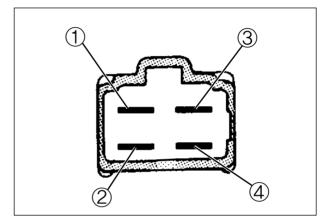
- Remove the right side cover.
- Remove the fuel pump relay (A).





First, check the insulation between ① and ② terminals with the pocket tester. Then apply 12 volts to ③ and ④ terminals, ⊕ to ③ and ⊖ to ④, and check the continuity between ① and ②.

If there is no continuity, replace it with a new one.



## FUEL MESH FILTER INSPECTION AND CLEANING

- If the fuel mesh filter is clogged with sediment or rust, fuel will not flow smoothly and loss in engine power may result.
- Blow the fuel mesh filter with compressed air.

## NOTE

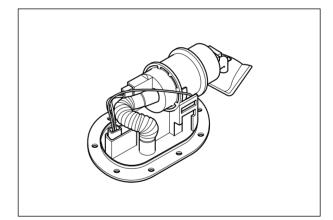
If the fuel mesh filter is clogged with many sediment or rust, replace the fuel filter cartridge with a new one.

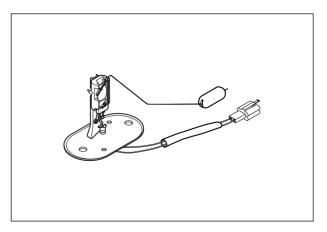
## FUEL GAUGE INSPECTION

• Measure resistance between the terminals when float is at the position instead below.

Fuel float position	Resistance between terminals
F	<b>Approx. 95 ~ 105</b> Ω
1/2	Approx. 38 Ω
E	<b>Approx. 4 ~ 10</b> Ω

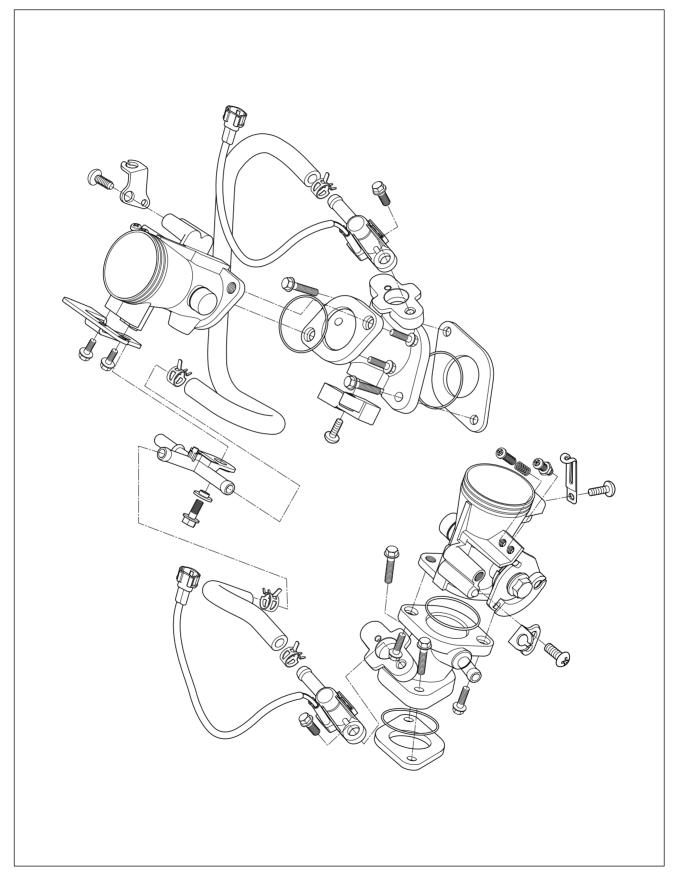
- If the resistance measured is out of the specification, replace the fuel gauge with a new one.
- Inspect the instrument panel (fuel level meter).





### FUEL SYSTEM AND THROTTLE BODY 4-2-6

# THROTTLE BODY

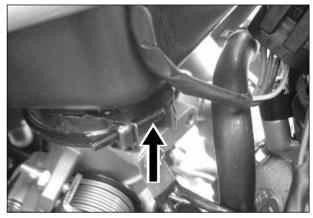


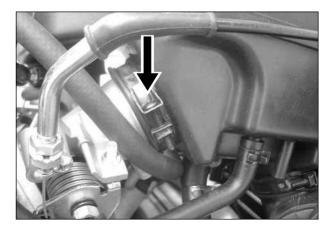
## REMOVAL

- Remove the fuel tank.
- Remove the air cleaner chamber.
- Disconnect the fuel hoses.
- Remove the all couplers connected to the throttle body.

• Loosen the throttle body clamp screws.



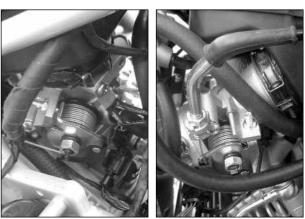




- Disconnect the throttle cables from their drum.
- Dismount the throttle body assembly.

# 

- Be careful not to damage the throttle cable bracket when dismounting or remounting the throttle body assembly.
- After disconnecting the throttle cables, do not snap the throttle valve from full open to full close. It may cause damage to the throttle valve and throttle body.



## CLEANING

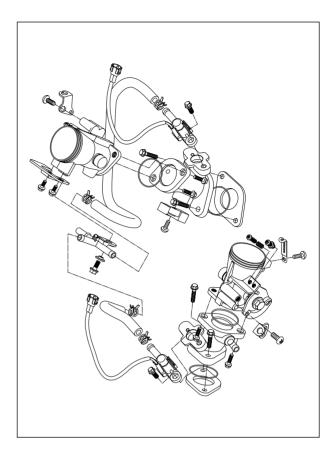
 Clean all passageways with a spray-type throttle body cleaner and blow dry with compressed air.

## 

Some throttle body cleaning chemicals, especially dip-type soaking solutions, are very corrosive and must be handled carefully. Always follow the chemical manufacturer's instructions on proper use, handling and storage.

# 

Do not use wire to clean passageways. Wire can damage passageways. If the components cannot be cleaned with a spray cleaner it may be necessary to use a dip-type cleaning solution and allow them to soak. Always follow the chemical manufacturer's instructions for proper use and cleaning of the throttle body components. Do not apply throttle body cleaning chemicals to the rubber and plastic materials.



### **INSPECTION**

- Check following items for any damage or clogging.
  - \* O-ring
  - \* Throttle shaft bushing and seal
  - \* Injector cushion seal
  - \* Fuel injector
  - \* Throttle body
  - \* Intake pipe
  - \* Throttle valve
  - \* Vacuum hose

Check fuel injector filter for evidence of dirt and contamination. If present, clean and check for presence of dirt in the fuel lines and fuel tank.

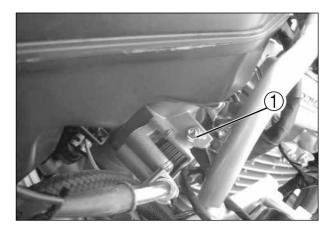
### INSTALLATION

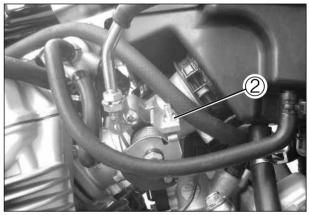
Installation is in the reverse order of removal. Pay attention to the following points :

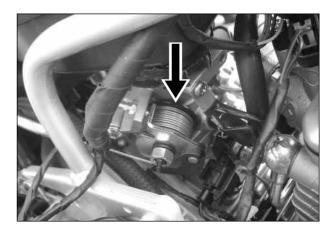
# $\triangle$ CAUTION

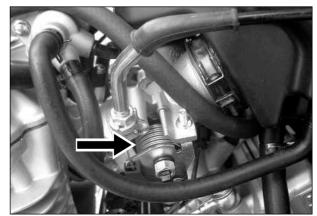
Never operate the idle nuts ①(NO.1) and ②(NO.2) to avoid variations of the carburetion setting.

- Connect the throttle cable to the throttle cable drum.
- Adjust the throttle cable play with the cable adjuster.







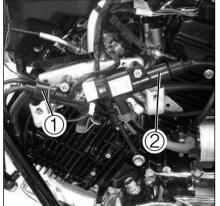


# ELECTRICAL SYSTEM

CONTENTS	
LOCATION OF ELECTRICAL COMPONENTS	86 [5-1]
IGNITION SYSTEM	88 [5-3]
CHARGING SYSTEM	91 [5-7]
STARTER SYSTEM AND SIDE STAND IGNITION INTERLOCK SYSTEM	93 [5-11]

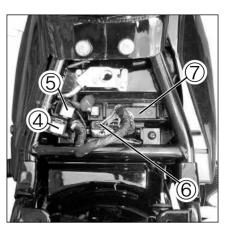
# LOCATION OF ELECTRICAL COMPONENTS

③ ISC solenoid

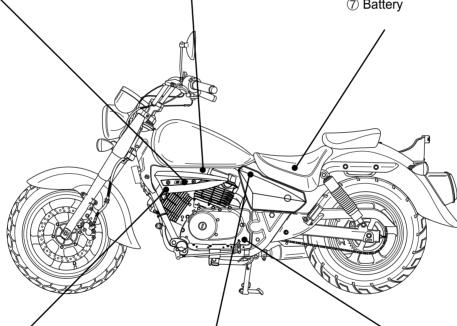


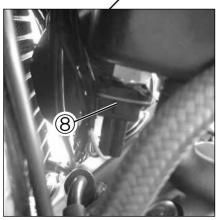
Ignition coil NO.1
 Ignition coil NO.2





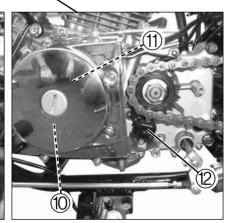
④ Main fuse (30A)
⑤ Head lamp fuse (15A)
⑥ ECU
⑦ Battery



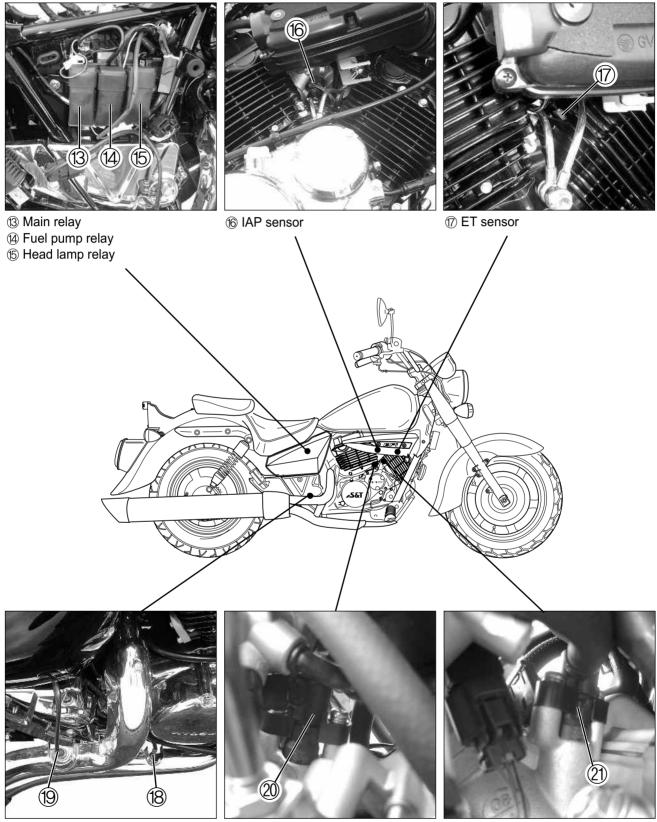


(8) IAT sensor

 $\textcircled{9} \mathsf{RO} \mathsf{switch}$ 



10 Magneto11 Pick-up coil12 GP switch

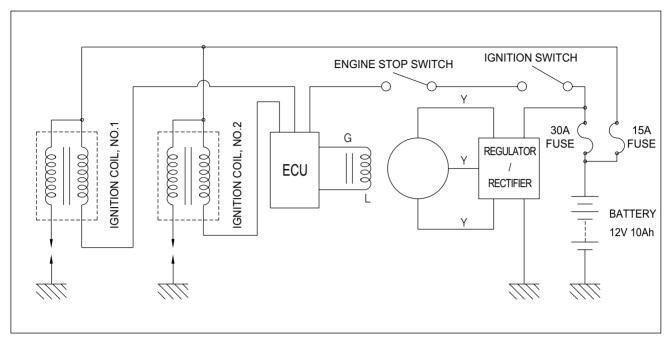


(B) Oxygen sensor NO.1(D) Oxygen sensor NO.2

2 Fuel injector NO.2

2 Fuel injector NO.1

# **IGNITION SYSTEM**



## $\odot$ INSPECTION

### MAGNETO

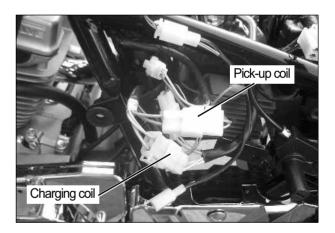
Using the pocket tester, measure the resistance between the lead wires in the following table. If the resistance is not within the specified value, replace the stator coil, with a new one.

Stator coil resistance	Standard	
Pick-up coil	G−L Approx. 85 ~ 105 Ω	
Charging coil	Y−Y Approx. 0.2 ~ 1.0 Ω	

**Tester knob indication : Resistance (** $\Omega$  **)** 

NOTE

When making above test, it is not necessary to remove the magneto.



#### IGNITION COIL PRIMARY PEAK VOLTAGE INSPECTION

- Remove the fuel tank and frame cover.
- Disconnect the two spark plug caps.
- With the spark plug cap connected, place a new spark plug on the engine to ground it.

# NOTE

Check that all the couplers are connected.

Check that the all battery is fully charged.

Measure the No.1 and No.2 ignition coil primary peak voltage using the tester in the following procedure.

• Connect the tester as follows.

#### NO.1 Ignition coil

 $\Rightarrow \bigoplus \mathsf{Probe} : \mathsf{BY} \mathsf{ lead wire terminal} \\ \bigcirc \mathsf{Probe} : \mathsf{Ground}$ 

#### NO.2 Ignition coil

 $\Rightarrow \bigoplus \mathsf{Probe} : \mathsf{WL} \mathsf{ lead wire terminal} \\ \bigoplus \mathsf{Probe} : \mathsf{Ground}$ 

## NOTE

Do not disconnect the ignition coil / plug cap lead wire couplers.

- Shift the transmission into the neutral and then turn the ignition switch to the "ON" position.
- Squeeze the clutch lever.
- Press the starter switch and allow the engine to crank for a few seconds, and then measure the ignition coil primary peak voltage.
- Repeat the above procedure a few times and measure the highest ignition coil primary peak voltage.

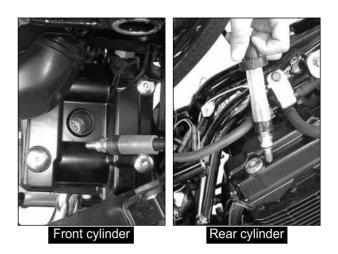
Ignition coil primary peak voltage 400 V and more

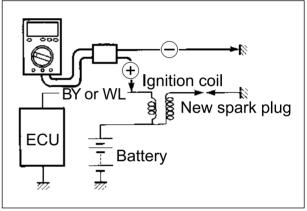
Tester knob indication : Voltage (==)

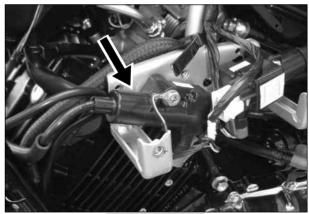
# A WARNING

While testing, do not touch the tester probes and spark plugs to prevent receiving an electric shock.

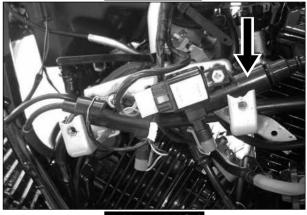
If the peak voltage is lower than the specified values, inspect the ignition coil. (Refer to the next page.)







Ignition coil NO.1



Ignition coil NO.2

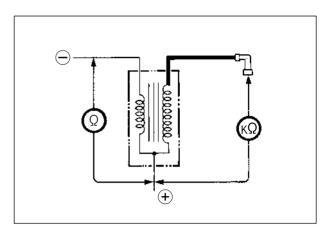
#### IGNITION COIL RESISTANCE INSPECTION

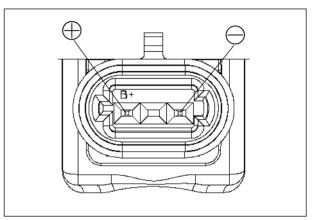
- Remove the fuel tank.
- Disconnect the ignition coil read wire.

Measure the ignition coil resistance in bolt the primary and secondary windings. If the resistance is not within the standard range, replace the ignition coil with a new one.

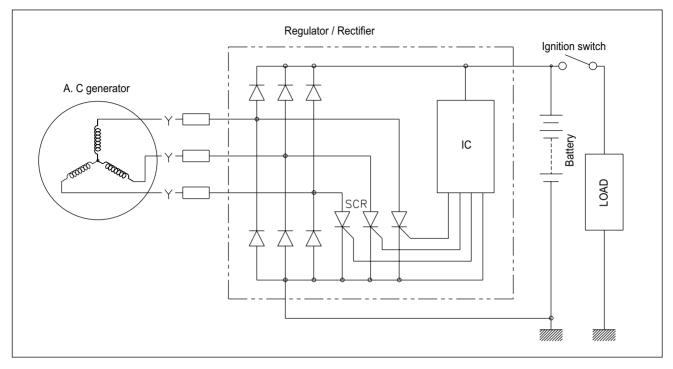
<b>IGNITION COIL / PLUG CAP RESISTANCE</b>			
Primary	$0.52 \sim 0.64 \ \Omega \ (\oplus \text{Terminal} - \ominus \text{Terminal})$		
Secondary	6.4 ~ 7.8 KΩ (Plug cap – $\oplus$ Terminal)		

Tester knob indication : Resistance ( $\Omega$ )





# **CHARGING SYSTEM**



# $\odot$ INSPECTION

### CHARGING OUTPUT CHECK

Start the engine and keep it running at 5,000 rpm. Using the pocket tester, measure the DC voltage between the battery terminal  $\oplus$  and  $\ominus$ .

If the voltage is not within the specified value, check the magneto no-load performance and regulator / rectifier.

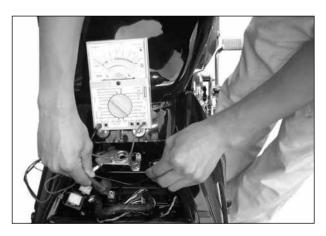
# 

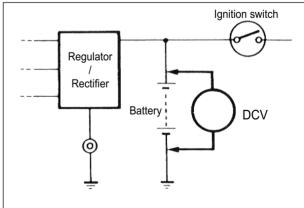
When making this test, be sure that the battery is full-charged condition.

### Standard charge

13.5 ~ 15.0 V (at 5,000 rpm)

Tester knob indication : Voltage (\_\_\_)





#### MAGNETO NO-LOAD PERFORMANCE

Disconnect the three lead wires from the magneto terminal.

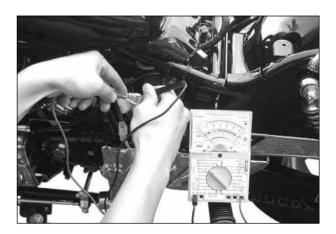
Start the engine and keep it running at 5,000 rpm.

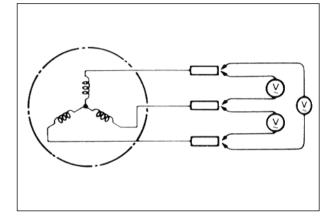
Using the pocket tester, measure the AC voltage between the three lead wires.

If the voltage is under the specified value, replace the magneto with a new one.



(Tester knob indication : Voltage (Tester )





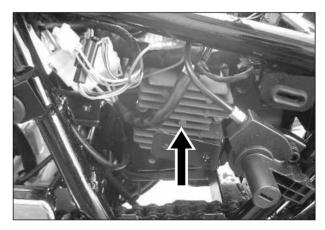
#### **REGULATOR / RECTIFIER**

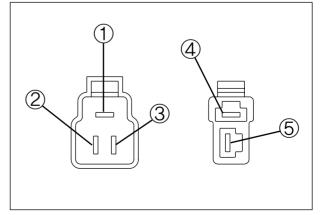
Disconnect the regulator / rectifier couplers. Measure the voltage between the terminals using the pocket tester as indicated in the table below. If the voltage is not within the specified value, replace the regulator / rectifier with a new one.

						Unit. V
		⊕ Tester probe				
G		1	2	3	4	5
rob	1		0	0	0	0.4~0.7
эг р	2	0		0	0	0.4~0.7
este	3	0	0		0	0.4~0.7
⊖ Tester probe	(4)	0.4~0.7	0.4~0.7	0.4~0.7		0.5~1.2
	5	0	0	0	0	

Unit : V

🖽 Tester knob indication : Diode test (+-)



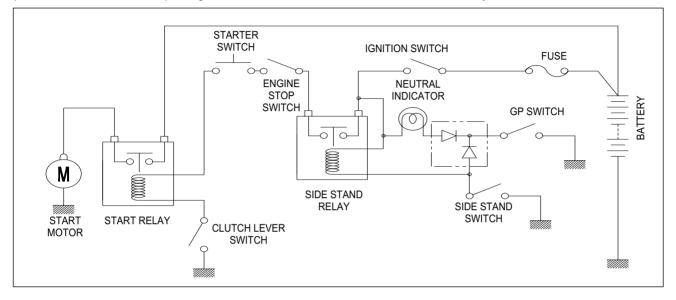


# STARTER SYSTEM AND SIDE STAND IGNITION INTERLOCK SYSTEM

## • STARTER SYSTEM DESCRIPTION

The starter system consists of the following components : the starter motor, starter relay, clutch lever switch, side stand switch, GP switch, starter switch, engine stop switch, ignition switch and battery.

Pressing the starter switch (on the right handlebar switch) energizes the starter relay, causing the contact points to close, thus completing the circuit from the starter motor to the battery.



## • SIDE STAND / IGNITION INTERLOCK SYSTEM DESCRIPTION

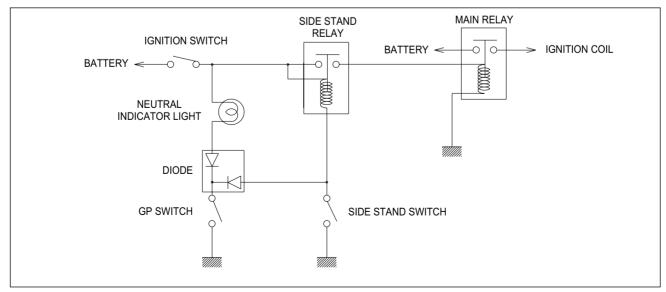
This side stand / ignition interlock system prevents the motorcycle from being started with side stand down. The system is operated by an electric circuit provided between the battery and ignition coil.

The circuit consists of the neutral indicator light and switches.

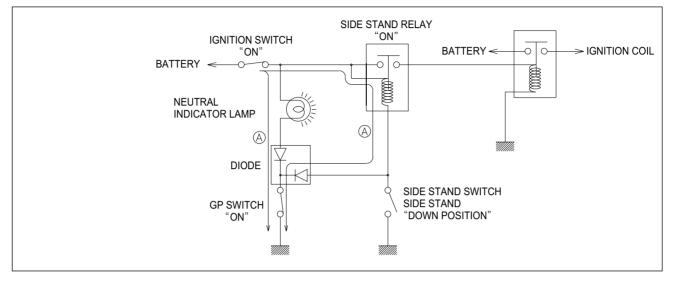
The ignition coils will send voltage to the spark plugs depending on what gear the transmission is in and whether the side stand is either up or down.

The gear position and side stand switches work together in this system.

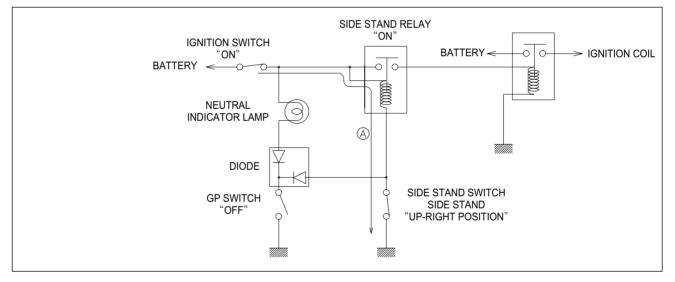
The ignition coil work only in two situations as follows.



#### TRANSMISSION : Neutral - "ON" Side stand - Down Clutch lever - Squeeze



#### TRANSMISSION : Neutral - "OFF" Side stand - Up Clutch lever - Squeeze



" GV250 EI DSPCC & " GT250/P/ REI DSPCC , are equipped with the side stand ignition interlock system.

If the transmission is in neutral or side stand up, you can only start the engine with pulling the clutch lever.

NO	Neutral switch	Clutch lever	Side stand	Engine Start
1		٠	$\triangle$	Possible
2	$\triangle$	●	•	Possible
3		$\bigtriangleup$	$\triangle$	Impossible
4	$\triangle$	•	$\triangle$	Impossible
5	$\bigtriangleup$	$\bigtriangleup$	•	Impossible

Ν	ΙΟΤΕ
•	On or Up
$\bigtriangleup$	Off or Down

# SERVICING INFORMATION

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# **TROUBLESHOOTING** • MALFUNCTION CODE AND DEFECTIVE CONDITION

MALFUNCTION CODE	DETECT	ED ITEM	DETECTED FAILURE CONDITION CHECK FOR	
noEr	NO FAULT			
0031		Low Voltage	After engine running, if oxygen sensor heater signal open or is happened the ground short fault for 1 second by 10 times in 12 times test cycle, the code 0031 is indicated.	
	NO.1		Oxygen sensor, lead wire / coupler connection.	
0032	O₂S heater Circuit	High Voltage	After engine running, if oxygen sensor heater signal is happened the high short fault for 1 second by 10 times in 12 times test cycle, the code 0032 is indicated.	
			Oxygen sensor, lead wire / coupler connection.	
0037		Low Voltage	After engine running, if oxygen sensor heater signal open or is happened the ground short fault for 1 second by 10 times in 12 times test cycle, the code 0037 is indicated.	
	NO.2		Oxygen sensor, lead wire / coupler connection.	
0038	- O₂S heater Circuit		High Voltage	After engine running, if oxygen sensor heater signal is happened the high short fault for 1 second by 10 times in 12 times test cycle, the code 0038 is indicated.
			Oxygen sensor, lead wire / coupler connection.	
0107	- IAPS Circuit	Low Voltage or Open	The sensor should produce following voltage. $0.15 \text{ V} \leq \text{Sensor output voltage}$ Without the above range for 2.2 sec. and more, 0107 is indicated.	
			Intake air pressure sensor, lead wire / coupler connection.	
0108		High Voltage	The sensor should produce following voltage. Sensor output voltage $\leq 5 \text{ V}$ Without the above range for 10.0 sec. and more, 0108 is indicated.	
			Intake air pressure sensor, lead wire / coupler connection.	
0112	– IATS Circuit -	Low Voltage	The sensor voltage should be the following. $0.1 \text{ V} \leq \text{Sensor output voltage}$ Without the above range for 6.25 sec. and more, 0112 is indicated.	
			Intake air temperature sensor, lead wire / coupler connection.	
0113		High Voltage or Open	The sensor voltage should be the following. Sensor output voltage $\leq 4.9 \text{ V}$ Without the above range for 6.25 sec. and more, 0113 is indicated.	
			Intake air temperature sensor, lead wire / coupler connection.	

MALFUNCTION CODE	DETECT	ED ITEM	DETECTED FAILURE CONDITION CHECK FOR
0444		Open	After engine running, if purge control valve signal open or is happened the ground short fault for 1 second by 10 times in 12 times test cycle, the code 0444 is indicated.
	PV Circuit (California model only)		Purge control valve, wiring / coupler connection, power supply from the battery.
0445			After engine running, if purge control valve signal is happened the high short fault for 1 second by 10 times in 12 times test cycle, the code 0445 is indicated.
			Purge control valve, wiring / coupler connection, power supply from the battery.
0505	ISC Error		After engine running, if idle speed is different to 500 rpm from the specified range in 25 seconds test cycle, the code 0505 is indicated.
			Idle speed control solenoid, wiring / coupler connection.
0562	Low	Low	The battery voltage should be the following. 9 V $\leq$ Battery voltage Without the above range for 3.125 sec. and more, 0562 is indicated.
	Battery		Battery, wiring / coupler connection to ECU.
0563	Voltage		The battery voltage should be the following. Battery voltage $\leq 16$ V Without the above range for 3.125 sec. and more, 0563 is indicated.
			Battery, wiring / coupler connection to ECU.
0650	"FI" check lamp Circuit Malfunction		After engine running, if "FI" check lamp signal open or is happened the high / ground short fault for 1 second by 40 times in 80 times test cycle, the code 0650 is indicated.
			"FI" check lamp, wiring / coupler connection.
0850	GP or Clutch lever Switch Circuit Malfunction		If gear position or clutch lever switch signal feedback is not active in continuous by 20 times in fully power down cycles, the code 0850 is indicated. (Fully power down cycle : Ignition switch "ON" $\rightarrow$ "OFF" position)
			Gear position or clutch lever switch, wiring / coupler connection, gearshift cam etc.

	DETECT	ED ITEM	DETECTED FAILURE CONDITION
<b>CODE</b> 0117		Low Voltage	CHECK FORThe sensor voltage should be the following. $0.1 V \leq$ Sensor output voltageWithout the above range for 6.25 sec. and more, 0117 is indicated.
			Engine temperature sensor, lead wire / coupler connection.
0118	- ETS Circuit	High Voltage or Open	The sensor voltage should be the following. Sensor output voltage $\leq 5 \text{ V}$ Without the above range for 6.25 sec. and more, 0118 is indicated.
			Engine temperature sensor, lead wire / coupler connection.
0122		Low Voltage or Open	The sensor should produce following voltage. 0.2 V $\leq$ Sensor output voltage Without the above range for 7.8 sec. and more, 0122 is indicated.
	TPS Circuit		Throttle position sensor, lead wire / coupler connection.
0123	- TPS Circuit	High Voltage	The sensor should produce following voltage. Sensor output voltage $\leq 4.9 \text{ V}$ Without the above range for 7.8 sec. and more, 0123 is indicated.
			Throttle position sensor, lead wire / coupler connection.
0131	NO.1 O₂S Circuit	Low Voltage	After engine running, the oxygen sensor signal is inputted in ECU since then 300 sec. In this case, the sensor voltage should be the following. $30 \text{ mV} \leq \text{Sensor output voltage}$ Without the above range for 28.1 sec. and more, 0131 is indicated.
			Oxygen sensor, lead wire / coupler connection.
0132		High Voltage	After engine running, the oxygen sensor signal is inputted in ECU since then 300 sec. In this case, the sensor voltage should be the following. Sensor output voltage $\leq 1.0$ V Without the above range for 29.4 sec. and more, 0132 is indicated.
			Oxygen sensor, lead wire / coupler connection.
0137	NO.2	Low Voltage	After engine running, the oxygen sensor signal is inputted in ECU since then 300 sec. In this case, the sensor voltage should be the following. $30 \text{ mV} \leq \text{Sensor output voltage}$ Without the above range for 28.1 sec. and more, 0137 is indicated.
			Oxygen sensor, lead wire / coupler connection.
0138	O₂S Circuit 0138		After engine running, the oxygen sensor signal is inputted in ECU since then 300 sec. In this case, the sensor voltage should be the following. Sensor output voltage $\leq 1.0 \text{ V}$ Without the above range for 29.4 sec. and more, 0138 is indicated.
			Oxygen sensor, lead wire / coupler connection.

MALFUNCTION CODE	DETECTED ITEM		DETECTED FAILURE CONDITION
0201	NO.1 Fuel Injector Circuit Malfunction		CHECK FOR After engine running, if NO.1 fuel injector signal open or is happened the high / ground short fault for 1 second by 5 times in 10 times test cycle, the code 0201 is indicated.
			Injector, wiring / coupler connection, power supply to the injector.
0202	NO.2 Fuel Injector Circuit Malfunction		After engine running, if NO.2 fuel injector signal open or is happened the high / ground short fault for 1second by 5 times in 10 times test cycle, the code 0202 is indicated.
			Injector, wiring / coupler connection, power supply to the injector.
0230		Low Voltage or Open	After engine running, if fuel pump relay signal open or is happened the ground short fault for 1 second by 10 times in 20 times test cycle, the code 0230 is indicated.
	Fuel pump	·	Fuel pump relay, connecting lead wire, power source to fuel pump relay, fuel injector.
0232	– relay Circuit	High Voltage	After engine running, if fuel pump relay signal is happened the high short fault for 1 second by 10 times in 20 times test cycle, the code 0232 is indicated.
			Fuel pump relay, connecting lead wire, power source to fuel pump relay, fuel injector.
0336		Noisy Signal	After engine running, if the magneto rotor tooth's error is happened continuously by 10 times in 100 times test cycle, the code 0336 is indicated.
		Pick-up coil	Pick-up coil wiring and mechanical parts. (Pick-up coil, lead wire coupler connection)
0337		No Signal	After engine running, if the pick-up coil signal does not reach ECU for more than 0.5 sec., the code 0337 is indicated.
			Pick-up coil wiring and mechanical parts. (Pick-up coil, lead wire coupler connection)
0351	NO.1 IG coil Malfunction		After engine running, if NO.1 ignition coil signal open or is happened the high / ground short fault for 1 second by 5 times in 10 times test cycle, the code 0351 is indicated.
			Ignition coil, wiring / coupler connection, power supply from the battery.
0352	NO.2 IG coil Malfunction		After engine running, if NO.2 ignition coil signal open or is happened the high / ground short fault for 1 second by 5 times in 10 times test cycle, the code 0352 is indicated.
			Ignition coil, wiring / coupler connection, power supply from the battery.

## ● ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not	Compression too low	
start or is hard	1. Tappet clearance out of adjustment.	Adjust.
to start.	2. Worn valve guides or poor seating of valves.	Repair or replace.
	3. Mistimed valves.	Adjust.
	4. Excessively worn piston rings.	Replace.
	5. Worn-down cylinder bore.	Replace.
	6. Starter motor cranks too slowly.	See electrical section.
	7. Poor seating of spark plugs.	Retighten.
	Plug not sparking	
	1. Fouled spark plugs.	Clean.
	2. Wet spark plugs.	Clean and dry.
	3. Defective ignition coils.	Replace.
	4. Open or short in high-tension cord.	Replace.
	5. Defective pick-up coil.	Replace.
	6. Defective ECU.	Replace.
	7. Open-circuited wiring connections.	Repair or replace.
	No fuel reaching the intake pipe	
	1. Clogged fuel filter or fuel hose.	Clean or replace.
	2. Defective fuel pump.	Replace.
	3. Defective fuel pressure regulator.	Replace.
	4. Defective fuel injector.	Replace.
	5. Defective fuel pump relay.	Replace.
	6. Defective ECU.	Replace.
	7. Open-circuited wiring connections.	Check and repair.
	Incorrect fuel / air mixture	
	1. Defective fuel pump.	Replace.
	2. Defective fuel pressure regulator.	Replace.
	3. Defective pick-up coil.	Replace.
	4. Defective IAP sensor.	Replace.
	5. Defective ECU.	Replace.
	6. Defective ET sensor.	Replace.
	7. Defective IAT sensor.	Replace.
	8. Defective TP sensor.	Replace.

Complaint	Symptom and possible causes	Remedy
Engine idles poorly.	1. Tappet clearance out of adjustment.	Adjust.
	2. Poor seating of valves.	Replace or repair.
	3. Defective valve guides.	Replace.
	4. Worn down camshafts.	Replace.
	5. Too wide spark plug gaps.	Adjust or replace.
	6. Defective ignition coils.	Replace.
	7. Defective pick-up coil.	Replace.
	8. Defective ECU.	Replace.
	9. Defective fuel pump.	Replace.
	10. Imbalanced throttle valve.	Adjust.
	11. Damaged or cracked vacuum hose.	Replace.
	12. Defective TP sensor.	Replace.
Engine stalls often.	Incorrect fuel / air mixture	
	1. Defective IAP sensor or circuit.	Repair or replace.
	2. Clogged fuel filter.	Clean or replace.
	3. Defective fuel pump.	Replace.
	4. Defective fuel pressure regulator.	Replace.
	5. Defective ET sensor.	Replace.
	6. Defective IAT sensor.	Replace.
	7. Damaged or cracked vacuum hose.	Replace.
	Fuel injector improperly operating	
	1. Defective fuel injectors.	Replace.
	2. No injection signal from ECU.	Repair or replace.
	3. Open or short circuited wiring connection.	Repair or replace.
	4. Defective battery or low battery voltage.	Replace or recharge.
	Control circuit or sensor improperly operating	
	1. Defective ECU.	Replace.
	2. Defective fuel pressure regulator.	Replace.
	3. Defective IAT sensor.	Replace.
	4. Defective pick-up coil.	Replace.
	5. Defective ET sensor.	Replace.
	6. Defective fuel pump relay.	Replace.
	7. Defective TP sensor.	Replace.
	Engine internal parts improperly operating	
	1. Fouled spark plugs.	Clean
	2. Defective pick-up coil or ECU.	Clean.
	3. Clogged fuel hose.	Replace.
	4. Tappet clearance out of adjustment.	Clean.
		Adjust.

Symptom and possible causes	Remedy
Excessive valve chatter	
1. Too large tappet clearance.	Adjust.
2. Weakened or broken valve springs.	Replace.
3. Worn tappet or cam surface.	Replace.
4. Worn and burnt camshaft journal.	Replace.
Noise seems to come from piston	
1. Worn down pistons or cylinders.	Replace.
2. Combustion chambers fouled with carbon.	Clean.
3. Worn piston pins or piston pin bore.	Replace.
4. Worn piston rings or ring grooves.	Replace.
Noise seems to come from cam chain	
1. Stretched chain.	Replace.
2. Worn sprockets.	Replace.
3. Tension adjuster not working.	Repair or replace.
Noise seems to come from clutch	
1. Worn splines of countershaft or hub.	Replace.
2. Worn teeth of clutch plates.	Replace.
3. Distorted clutch plates, driven and drive.	Replace.
4. Worn clutch release bearing.	Replace.
5. Weakened clutch dampers.	Replace the primary driven gear.
Noise seems to come from crankshaft	
1. Rattling bearings due to wear.	Replace.
2. Worn and burnt big-end bearings.	Replace.
3. Worn and burnt journal bearings.	Replace.
Noise seems to come from transmission	
1. Worn or rubbing gears.	Replace.
2. Worn splines.	Replace.
•	Replace.
4. Worn or rubbing primary gears.	Replace.
	<ul> <li>Excessive valve chatter <ol> <li>Too large tappet clearance.</li> <li>Weakened or broken valve springs.</li> <li>Worn tappet or cam surface.</li> <li>Worn and burnt camshaft journal.</li> </ol> </li> <li>Noise seems to come from piston <ol> <li>Worn down pistons or cylinders.</li> <li>Combustion chambers fouled with carbon.</li> <li>Worn piston pins or piston pin bore.</li> <li>Worn piston rings or ring grooves.</li> </ol> </li> <li>Noise seems to come from cam chain <ol> <li>Stretched chain.</li> <li>Worn sprockets.</li> <li>Tension adjuster not working.</li> </ol> </li> <li>Noise seems to come from clutch <ol> <li>Worn splines of countershaft or hub.</li> <li>Worn clutch plates.</li> <li>Distorted clutch plates.</li> <li>Distorted clutch dampers.</li> </ol> </li> <li>Noise seems to come from crankshaft <ol> <li>Rattling bearings due to wear.</li> <li>Worn and burnt journal bearings.</li> </ol> </li> <li>Noise seems to come from transmission <ol> <li>Worn and burnt journal bearings.</li> <li>Worn and burnt journal bearings.</li> </ol> </li> </ul>

Complaint	Symptom and possible causes	Remedy
Engine runs poorly	Defective engine internal / electrical parts	
in high speed	1. Weakened valve springs.	Replace.
range.	2. Worn camshafts.	Replace.
	3. Valve timing out of adjustment.	Adjust.
	4. Too narrow spark plug gaps.	Adjust.
	<ol> <li>Ignition not advanced sufficiently due to poorly working timing advance circuit.</li> </ol>	Replace ECU.
	6. Defective ignition coils.	Replace.
	7. Defective pick-up coil.	Replace.
	8. Defective ECU.	Replace.
	9. Clogged fuel hose, resulting in inadequate fuel supply to injector.	Clean and prime.
	10. Defective fuel pump.	Replace.
	11. Defective TP sensor.	Replace.
	12. Clogged air cleaner element.	Clean.
	Defective air flow system	
	1. Clogged air cleaner element.	Clean or replace.
	2. Defective throttle valve.	Adjust or replace.
	3. Sucking air from throttle body joint.	Repair or replace.
	4. Defective ECU.	Replace.
	Defective control circuit or sensor	
	1. Low fuel pressure.	Repair or replace.
	2. Defective IAT sensor.	Replace.
	3. Defective pick-up coil.	Replace.
	4. Defective IAP sensor.	Replace.
	5. Defective ECU.	Replace.
	6. Defective TP sensor.	Replace.

#### 7-3-1 SERVICING INFORMATION

Complaint	Symptom and possible causes	Remedy
Engine lacks	Defective engine internal / electrical parts	
power.	1. Loss of tappet clearance.	Adjust.
	2. Weakened valve springs.	Replace.
	3. Valve timing out of adjustment.	Adjust.
	4. Worn piston rings or cylinders.	Replace.
	5. Poor seating of valves.	Repair.
	6. Fouled spark plugs.	Clean or replace.
	7. Incorrect spark plug gaps.	Adjust or replace.
	8. Clogged injectors.	Clean.
	9. Clogged air cleaner element.	Clean.
	10. Sucking air from throttle valve or vacuum hose.	Retighten or replace.
	11. Too much engine oil.	Drain out excess oil.
	12. Defective fuel pump or ECU.	Replace.
	13. Defective pick-up coil and ignition coils.	Replace.
	14. Defective TP sensor.	Replace.
	Defective control circuit or sensor	
	1. Low fuel pressure.	Repair or replace.
	2. Defective IAT sensor.	Replace.
	3. Defective pick-up coil.	Replace.
	4. Defective IAP sensor.	Replace.
	5. Defective ECU.	Replace.
	6. Defective TP sensor.	Replace.
	7. Defective GP switch.	Replace.
Engine overheats.	Defective engine internal parts	
	1. Heavy carbon deposit on piston crowns.	Clean.
	2. Not enough oil in the engine.	Add oil.
	3. Defective oil pump or clogged oil circuit.	Replace or clean.
	4. Sucking air from intake pipes.	Retighten or replace.
	5. Use incorrect engine oil.	Change.
	6. Defective oil cooler.	Clean or replace.
	Lean fuel / air mixture	
	1. Short-circuited IAP sensor / lead wire.	Repair or replace.
	2. Short-circuited IAT sensor / lead wire.	Repair or replace.
	3. Sucking air from intake pipe joint.	Repair or replace.
	4. Defective fuel injectors.	Replace.
	5. Defective ET sensor.	Replace.
	The other factors	
	1. Ignition timing too advanced due to defective timing advance	Replace.
	system (ET sensor, pick-up coil, GP switch and ECU). 2. Drive chain is too tight.	Adjust.

Complaint	Symptom and possible causes	Remedy
Dirty or heavy exhaust smoke.	1. Too much engine oil in the engine.	Check with inspection win- dow, drain out excess oil.
	2. Worn piston rings or cylinders.	Replace.
	3. Worn valve guides.	Replace.
	<ol> <li>Cylinder wall scored or scuffed.</li> <li>Worn valves stems.</li> </ol>	Replace. Replace.
	6. Defective stem seals.	Replace.
	7. Worn side rails.	Replace.
Slipping clutch.	1. Weakened clutch springs.	Replace.
	2. Worn or distorted pressure plates.	Replace.
	3. Distorted clutch plates or pressure plates.	Replace.
Dragging clutch.	1. Some clutch springs weakened while others are not.	Replace.
	2. Distorted pressure plates or clutch plates.	Replace.
Transmission will	1. Broken gearshift cam.	Replace.
not shift.	2. Distorted gearshift forks.	Replace.
	3. Worn gearshift pawl.	Replace.
Transmission will	1. Broken return spring on shift shaft.	Replace.
not shift back.	2. Rubbing or sticky shift shaft.	Repair or replace.
	3. Distorted or worn gearshift forks.	Replace.
Transmission	1. Worn shifting gears on driveshaft or countershaft.	Replace.
jumps out of	2. Distorted or worn gearshift forks.	Replace.
gear.	3. Weakened stopper spring on gearshift stopper.	Replace.

## **● ELECTRICAL**

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	<ol> <li>Defective ignition coils or spark plug caps.</li> <li>Defective spark plugs.</li> </ol>	Replace. Replace.
jj-	3. Defective pick-up coil.	Replace.
	4. Defective ECU.	Replace.
	5. Defective RO switch.	Replace.
	6. Open-circuited wiring connections.	Check and repair.
Spark plug soon	1. Mixture too rich.	Inspect El system.
become fouled	2. Idling speed set too high.	Inspect El system.
with carbon.	3. Incorrect gasoline.	Change.
	4. Dirty element in air cleaner.	Clean or replace.
	5. Spark plugs too cold.	Replace by hot type plug.
Spark plug	1. Worn piston rings.	Replace.
become fouled	2. Pistons or cylinders worn.	Replace.
too soon.	3. Excessive clearance of valve stems in valve guides.	Replace.
	4. Worn stem oil seal.	Replace.
Spark plug	1. Spark plugs too hot.	Replace by cold type plug.
electrodes	2. The engine overheats.	Tune up.
overheat or	3. Spark plugs loose.	Retighten.
burn.	4. Mixture too lean.	Inspect El system.
Magneto charge, but charging	<ol> <li>Lead wires tend to get shorted or open-circuited or loosely connected at terminals.</li> </ol>	Repair or retighten.
rate is below the	2. Grounded or open-circuited stator coils of magneto.	Replace.
specification.	3. Defective regulator / rectifier.	Replace.
	4. Defective cell plates in the battery.	Replace the battery.
Magneto	1. Internal short - circuit in the battery.	Replace the battery.
overcharges.	2. Resistor element in the regulator / rectifier damaged or defective.	Replace.
	3. Regulator / rectifier poorly grounded.	Clean and tighten ground
		connection.
Magneto does not	1. Open - or short - circuited lead wirse, or loose lead connections.	Repair or replace or retighten.
charge.	2. Short - circuited, grounded or open stator coil.	Replace.
	3. Short - circuited or punctured regulator / rectifier.	Replace.
Unstable charging.	<ol> <li>Lead wire insulation frayed due to vibration resulting in intermittent shorting.</li> </ol>	Repair or replace.
	2. Magneto internally shorted.	Replace.
	3. Defective regulator / rectifier.	Replace.
Starter switch is	1. Battery run down.	Recharge or replace.
not effective.	2. Defective switch contacts.	Replace.
	3. Brushes not seating properly on commutator in starter motor.	Repair or replace.
	4. Defective starter relay / ignition interlock switch.	Replace.
	5. Defective main fuse.	Replace.

# SPECIAL TOOLS

Special tools	Part Number $\cdot$ Part Name $\cdot$ Description
	09900-27000 Mode select switch
Jøy -	Inspect EI system sensor.
<b>O</b> H	09915-54510 Fuel pump pressure gauge
	Measure fuel pressure of fuel pump.

# TIGHTENING TORQUE

### • EI SYSTEM PARTS

ITEM	N · m	kgf ∙ m
Engine temperature sensor (ET sensor)	5~8	0.5 ~ 0.8
Fuel injector mounting bolt	5~8	0.5 ~ 0.8
Intake air temperature sensor (IAT sensor)	5~8	0.5 ~ 0.8

## SERVICE DATA

### **● EI SENSORS**

ITEM	SPECIFICATION		NOTE
IAP sensor input voltage	4.5 ~ 5.5 V		
IAP sensor output voltage	3.3 ~ 4.3 V when ignition switch "ON"		
TP sensor input voltage		4.9 ~ 5.1 V	
	Closed	Approx. 1.07 V ~ 1.17 V	
TP sensor output voltage	Opened	Approx. 4.30 V ~ 4.70 V	
IAT sensor resistance	0.081 ~ 48.352 KΩ [When Intake air temperature is -40°C ~ 130°C (-40°F ~ 266°F)]		
IAT sensor resistance (each temperature)	Refer to page 54 [4-1-37]		
RO switch resistance	∞ Ω (In	finity) [at normal condition]	
	0 Ω [at leaned more than 60°]		
GP switch resistance	100 Ω ~ 2.0 KΩ		
Oxygen sensor heater voltage	Battery voltage		
ET sensor resistance	0.102 ~ 81.000 KΩ [When Engine temperature is –20℃ ~ 180℃ (–4℉ ~ 356℉)]		
	–20℃ (–4°F)	Approx. 75.5 KΩ	
	0℃ (32°F)	Approx. 28.7 KΩ	
	20°C (68°F)	Approx. 12.2 KΩ	
	40℃ (104°F)	Approx. 5.6 KΩ	
ET sensor resistance [To ECU]	60℃ (140°F)	Approx. 2.8 KΩ	
(each temperature)	80℃ (176°F)	Approx. 1.5 KΩ	
	120°C (248°F)	Approx. 0.5 KΩ	
	140°C (284°F)	Approx. 0.3 KΩ	
	160℃ (320°F)	Approx. 0.2 KΩ	
	180℃ (356°F)	Approx. 0.13 KΩ	

#### **● THROTTLE BODY**

ITEM	SPECIFICATION	NOTE
I.D. No.	13400H88	
Bore size	ø 28	
Idle rpm	1,500 ~ 1,700 rpm	
Throttle cable play	0.5 ~ 1.0 mm (0.02 ~ 0.04 in)	

### ● FUEL INJECTOR + FUEL PUMP

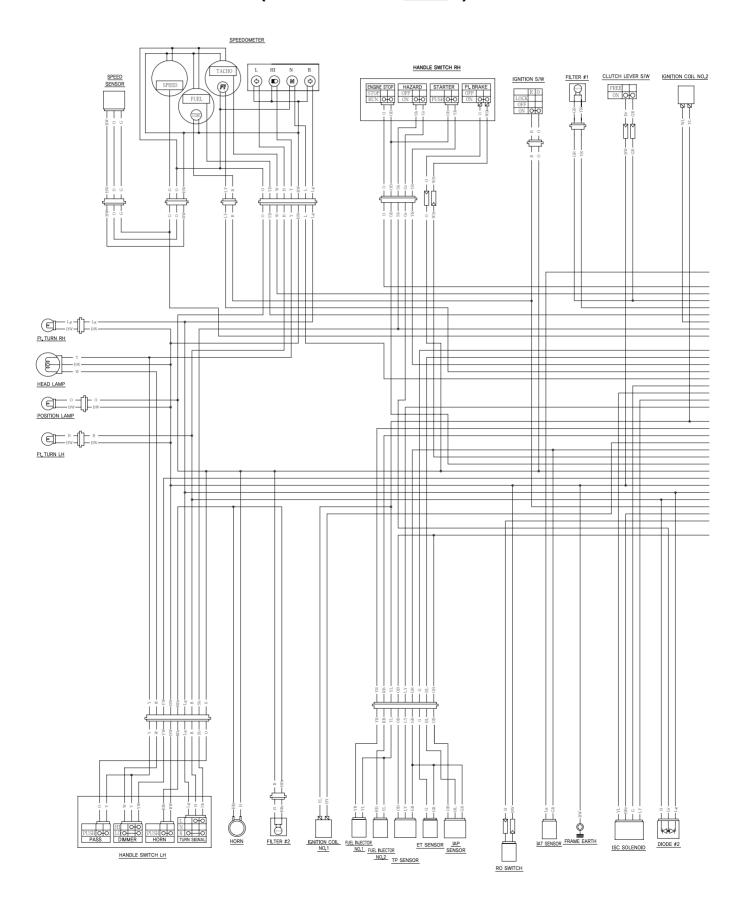
ITEM	SPECIFICATION	NOTE
Fuel injector resistance	11.4 ~ 12.6 Ω at 20°C (68°F)	
Fuel injector voltage	Battery voltage	
Fuel pressure of fuel pump	Approx. 2.25 ~ 2.50 kgf/cm² (220 ~ 245 kPa, 32.0 ~ 35.6 psi)	

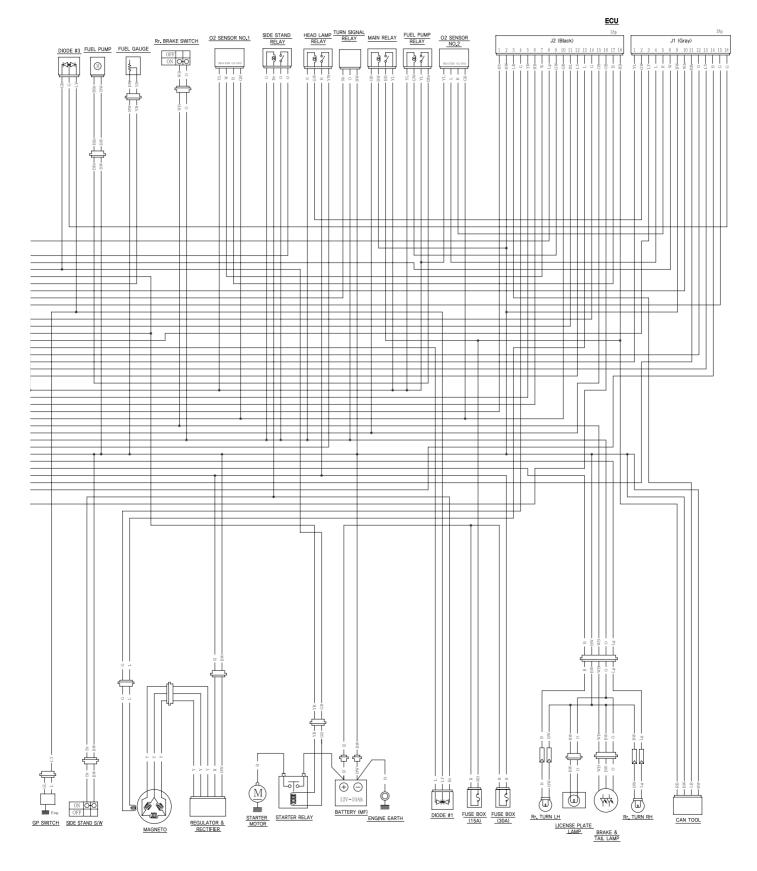
#### • ELECTRICAL

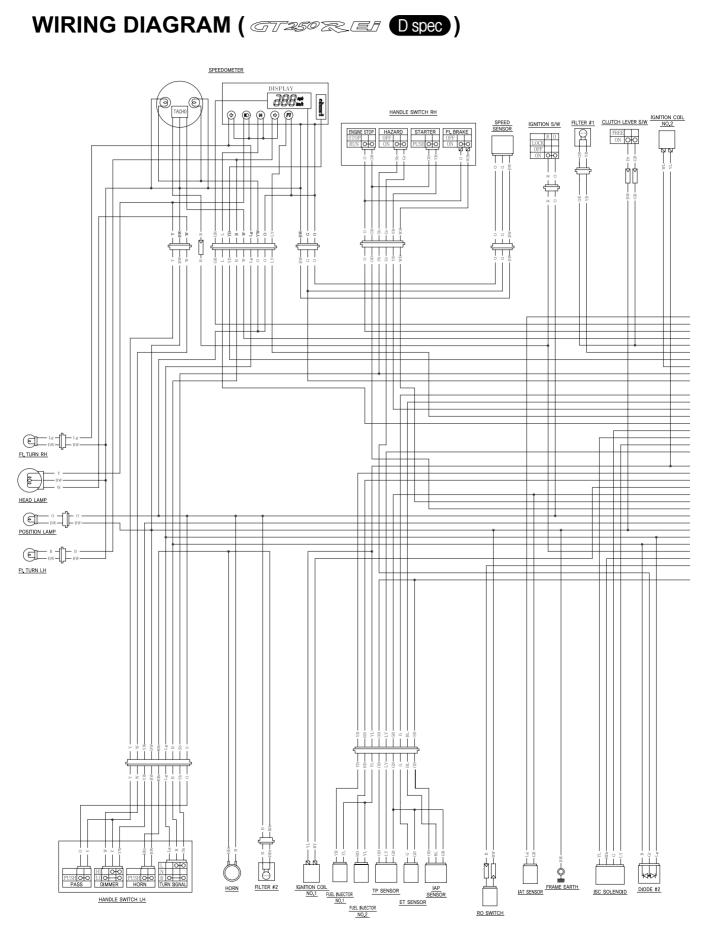
Unit : mm (in)

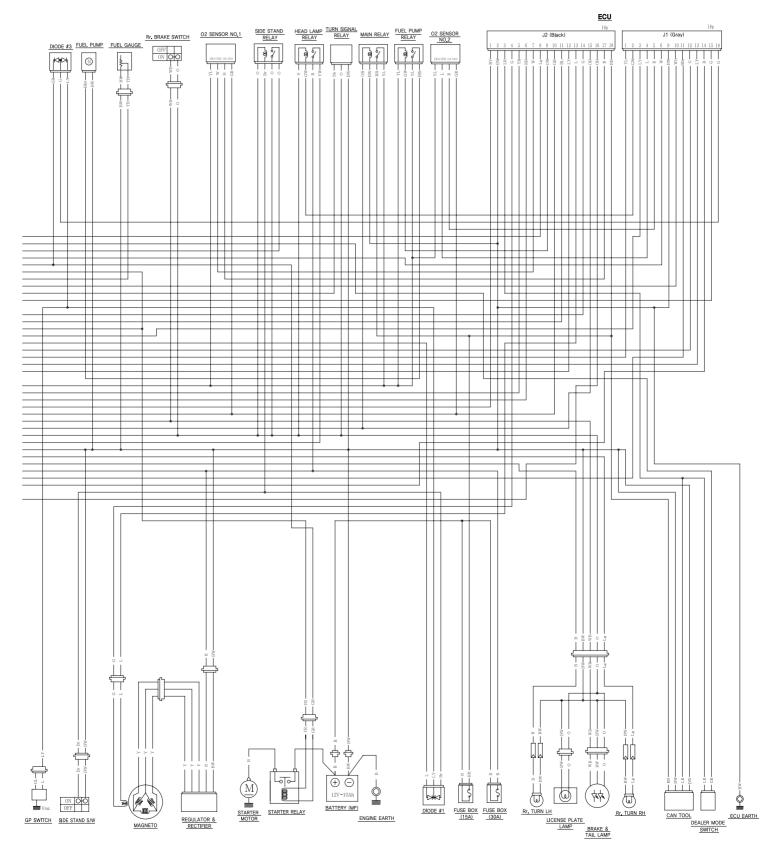
ITEM	STANDARD		NOTE
Ignition timing	BTDC 13° / 2,000 rpm ~ 30° / 6,000 rpm		
Spark plug	Туре	CR8E	
	Gap	0.7 ~ 0.8 (0.028 ~ 0.032)	
	Hot type	CR7E	
	Standard type	CR8E	
	Cold type	CR9E	
Spark performance	More than 8 mm (0.32 in)		
Ignition coil primary peak voltage	400 V and more		
Ignition coil resistance	Primary	<b>0.52 ~ 0.64</b> Ω	
	Secondary	6.4 ~ 7.8 KΩ	
Stator coil resistance	Pick-up coil	<b>Approx. 85 ~ 105</b> Ω	G-L
	Charging coil	<b>Approx. 0.2 ~ 1.0</b> Ω	Y-Y
Magneto no-load performance	Over 60 V / 5,000 rpm		
Battery standard charging voltage	13.5 ~ 15.0 V / 5,000 rpm		
Battery	Туре	YTX12-BS	
	Capacity	12V 10Ah	
	Standard electrolyte S.G.	1.320 at 20℃ (68°F)	
Fuse size	Main	30A	
	Head lamp	15A	

WIRING DIAGRAM ( GV250 E DSpec )

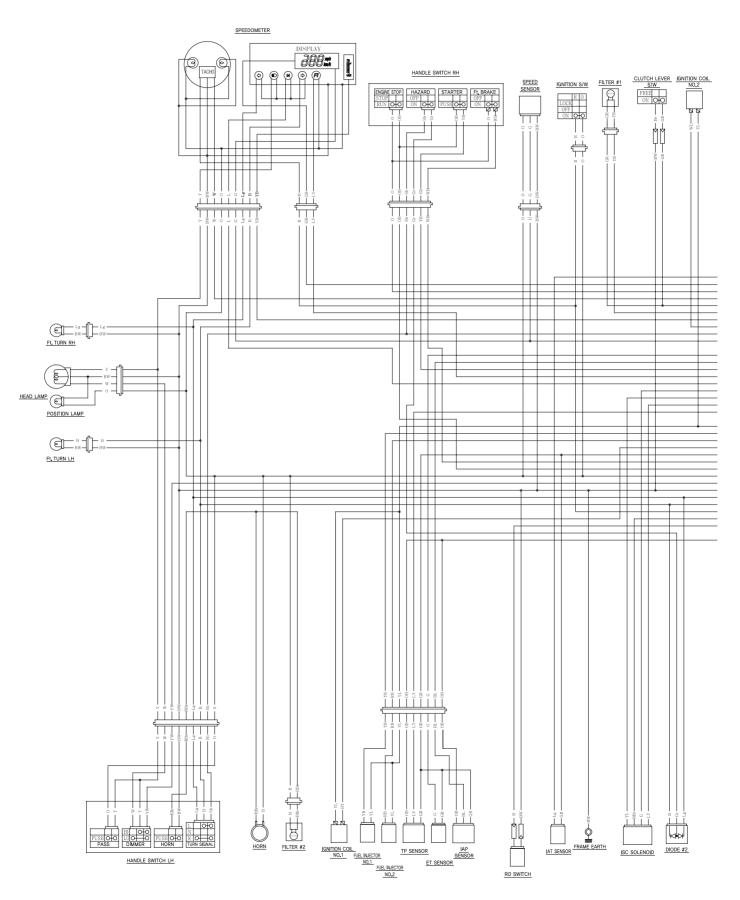


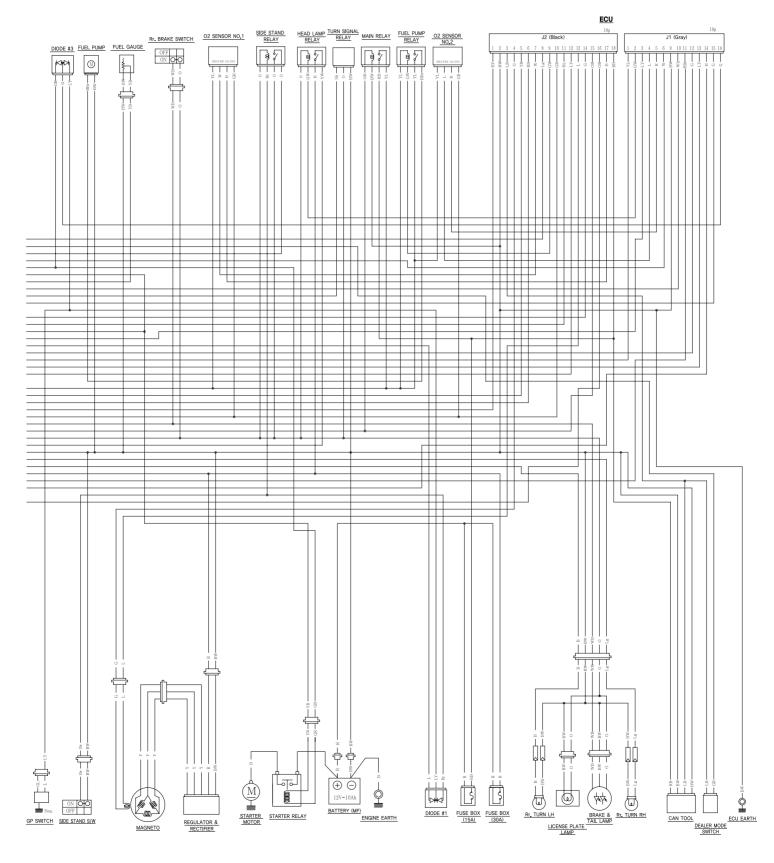


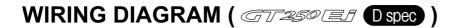


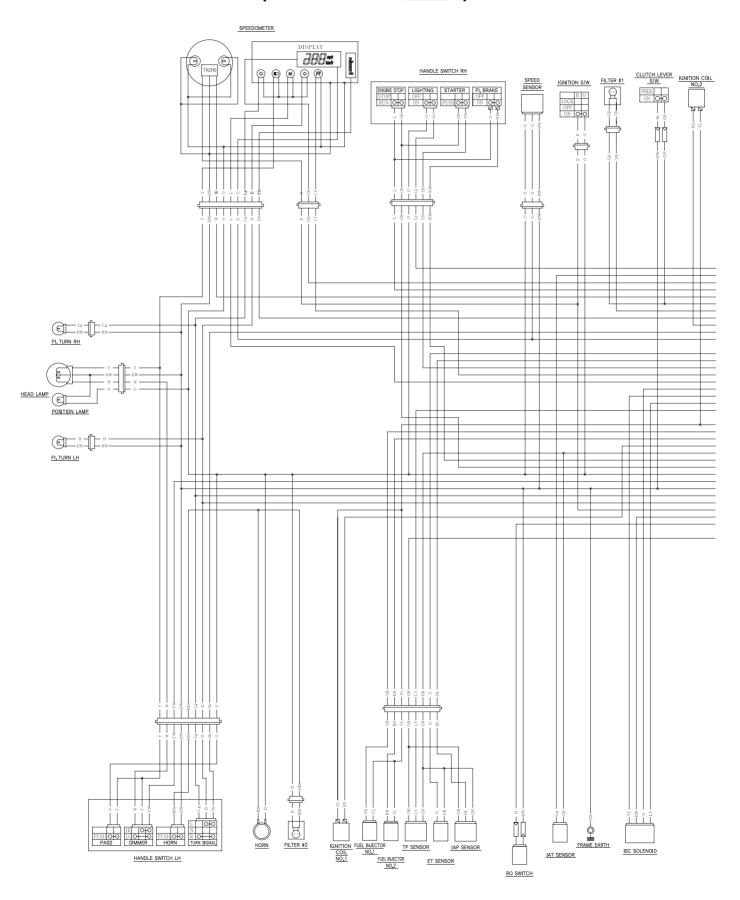


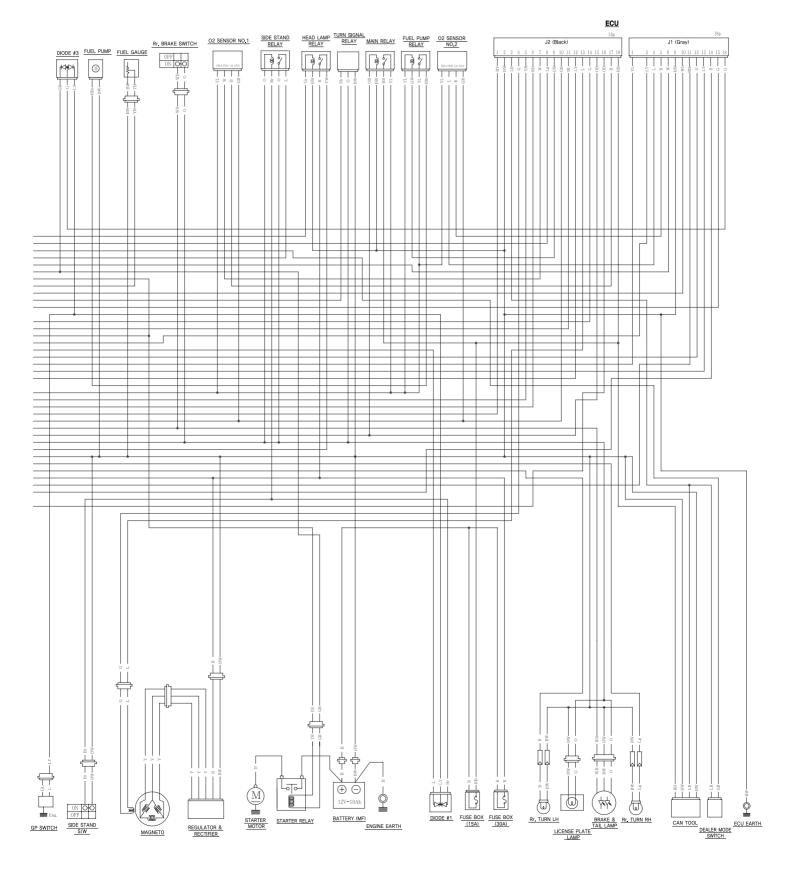


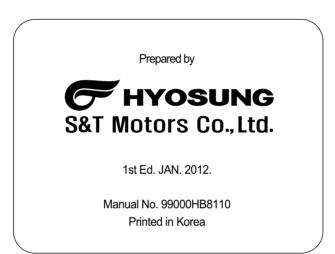












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