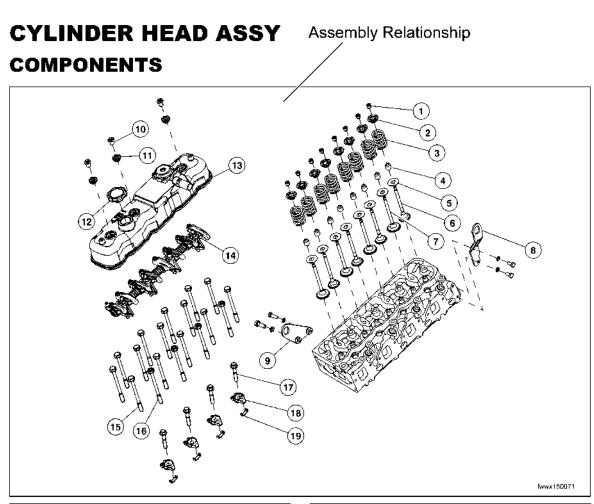
(b) The components' illustration shows the all parts relationship in the same assy. A table following the illustration lists the name of each part.

Example:



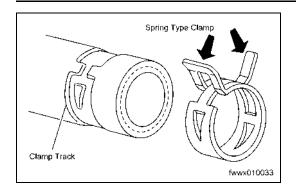
1	Valve Spring Lock
2	Upper Valve Spring Retainer
3	Valve Spring
4	Valve Oil Seal
5	Lower Valve Spring Retainer
6	Exhaust Valve
7	Intake Valve
8	Rear Engine Lifting Hook
9	Front Engine Lifting Hook
10	Cylinder Head Cover Bolt

11	Cylinder Head Cover Gasket
12	Oil Filling Cap
13	Cylinder Head Cover
14	Rocker Arm And Rocker Shaft Assy
15	Cylinder Head Bolt
16	Cylinder Head Bolt (With Groove)
17	Fuel Injector Pressure Plate Bolt
18	Fuel Injector Pressure Plate
19	Fuel Injector Pressure Plate Block

Parts List

fwwx010053





5. HANDLING OF HOSE CLAMPS.

- (a) Before removing the hose, record the depth of the inserting portion and the old clamp position in order to reinstall it correctly.
- (b) If deformation or dent is found, replace it with a new one.
- (c) In case of reusing the hose, install the clamp on the hose where it has a clamp track.
- (d) For a spring type clamp, adjust it by applying force to the arrow mark direction after the installation.

6. FOR VEHICLES EQUIPPED WITH CATALYTIC CONVERTER.

⚠ CAUTION

If large amount of unburned fuel flows into the converter, it may cause overheating and a fire hazard. To prevent this, observe the following precautions.

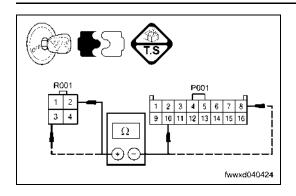
- (a) Use only unleaded gasoline (gasoline vehicles).
- (b) Avoid running the engine at idle speed for more than 20 minutes.
- (c) Avoid a spark jump test.
- Perform a spark jump test only when absolutely necessary. Perform this test as quickly as possible.
- While testing, never race the engine.
- (d) Avoid a prolonged engine compression measurement. This operation must be performed as quickly as possible.
- (e) Do not run the engine when the fuel tank is nearly empty. This may cause the engine to misfire and damage the catalytic converter.

- (i) In order to identify the faulty position, we must check the vehicle condition while vehicle goes out of order. For example, we check the faults through the DTC. And we record these faults states before disconnecting every connector or removing and installing components.
- (j) We must remove and install ECM, actuators and independent sensors when the ignition switch is OFF unless there is additional specification in the checking procedure.
- (k) If the removed and installed ECM, actuators and sensors are to be reinstalled, the system should be checked after completing installation. Using the special diagnosis tool, check DTC.
- (I) Check the ECM connector terminals with a digital multimeter.
- Connect the small probing pin to the probe of a digital multimeter.
- Check voltage value of terminals referring to the inspection sheet by backprobing ECM connectors terminals.
- (m) When diagnosis, turn the ignition switch ON and the connectors are dissociated. DTCs of other system will be set. After diagnosis, confirm DTCs in all systems. Turn the ignition switch OFF when the connectors are connected and disconnected.
- (n) The test probe must not be probed in wire harness. This will reduce the waterproofness. And it also cause corossion. Use the test wire, wire connector to measure wire and so on.
- (o) Check the common connectors when they are in connection status by probing terminals in the wire harness. If the connector is too small to check, do not insert by force.
- (p) If check the common connectors when they are not in connection status (check male connectors):
- Do not short terminals circuit by using a probe. This will damage the interior circuits in ECM.
- The system is to be checked and other system will store DTC when they aren't in connecting status.
- (g) If check the common connectors when they are not in connection status (check female connectors):
 - Use the special tools to check wire harness.
 - The system is to be checked and other system will store DTC when they aren't in connecting status.
- (r) We shall have a short harness or connectors without taking cautions by wrong insertion. This will damage wire harness, sensor, ECM and other components. So we must carefully handle when checking.
- (s) Do not check with the list order.
- If the check results are different from the standard value, then check related sensors, actuators and wire harness. Repair or replace as necessary.
- Check with the voltage meter again after repairing or replacing. Confirm whether the faults have been eliminated.
- (t) Check resistance and continuity between terminals of ECM with multimeter.
- Ignition switch: OFF
- Disconnect ECM harness connector
- (u) Ground inspection.
- Ground connections are very important to the proper operation of electrical and electronic circuits.
 Ground connections are often exposed to moisture, dirt and other corrosive elements. The corrosion (rust) can become an unwanted resistance. This unwanted resistance can change the way a circuit works.
- Electronically controlled circuits are very sensitive to proper grounding. A loose or corroded ground can drastically affect an electronically controlled circuit. A poor or corroded ground can easily affect the circuit. Even when the ground connection looks clean, there can be a thin film of rust on the surface.
- (v) When inspecting a ground connection, follow these rules:



STANDARD NORMAL RESISTANCE AS FOLLOW

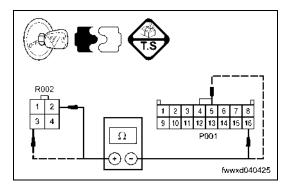
No.	Item	Normal Condition
1	Throttle position sensor	Hall type (20 °C)
2	Timing stroke sensor	Hall type (20 °C)
3	EGR Valve lift sensor	Hall type (20 °C)
4	Timing solenoid valve	12 \sim 20 Ω (20 $^{\circ}\mathrm{C}$)
	ECT sensor	3.288 KΩ (20 °C)
		1.586 KΩ (20 °C)
5		0.8 KΩ (20 °C)
		0.426 KΩ (20 °C)
		0.24 KΩ (20 °C)
6	EGR vacuum solenoid valve	35.8 ± 0.5 Ω (20 ℃)



(f) Measure the resistance according to the value(s) in the table below.

Standard resistance (check for open)

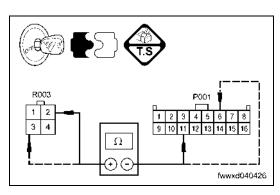
Tester Connection	Specified Condition	
P001 (10) - R001 (2)	< 2.0	
P001 (8) - R001 (3)	< 2 Ω	



(g) Measure the resistance according to the value(s) in the table below.

Standard resistance (check for open)

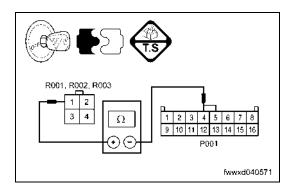
Tester Connection	Specified Condition	
P001 (16) - R002 (2)	< 2.0	
P001 (5) - R002 (3)	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	



(h) Measure the resistance according to the value(s) in the table below.

Standard resistance (check for open)

Tester Connection	Specified Condition	
P001 (11) - R003 (2)	< 2 Ω	
P001 (6) - R003 (3)		



(i) Measure the resistance according to the value(s) in the table below.

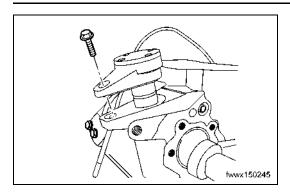
Standard resistance (check for open)

Tester Connection	Specified Condition
P001 (4) - R001 (1)	
P001 (4) - R002 (1)	< 2 Ω
P001 (4) - R003 (1)	

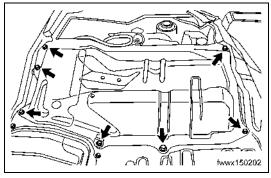
Is the check result normal?

YES > Replace the reverse radar control unit.

NO > Repair or replace harness or connector.

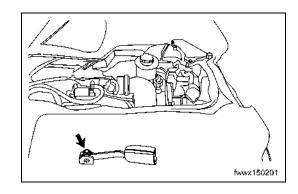


17. INSTALL OIL PUMP DRIVING SHAFT RETAINING BOLT.



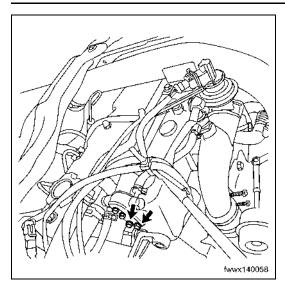
18. INSTALL 7 ENGINE COVER RETAINING BOLTS.
Torque: 21 ~ 25 N•m

19. INSTALL ENGINE SURFACING.

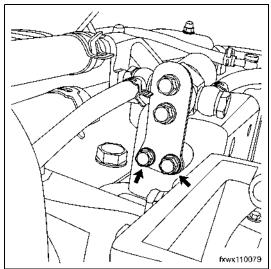


20. INSTALLE BUCKLE ASSY. Torque: 41 ~ 51 N•m

- 21. INSTALL ASSISTANT DRIVER SEAT. (Refer to "Chapter 84 seat driver / assistant driver seat, replacement")
- 22. PUT DOWN DRIVER SEAT AND LOCK IT.

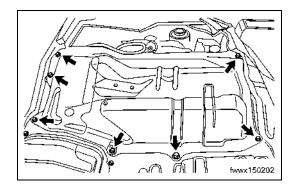


(b) Remove 2 glow plug retaining bolts.



6. INSTALL GLOW PLUG.

- (a) Install 2 glow plug retaining bolts.
- (b) Connect glow plug connector.



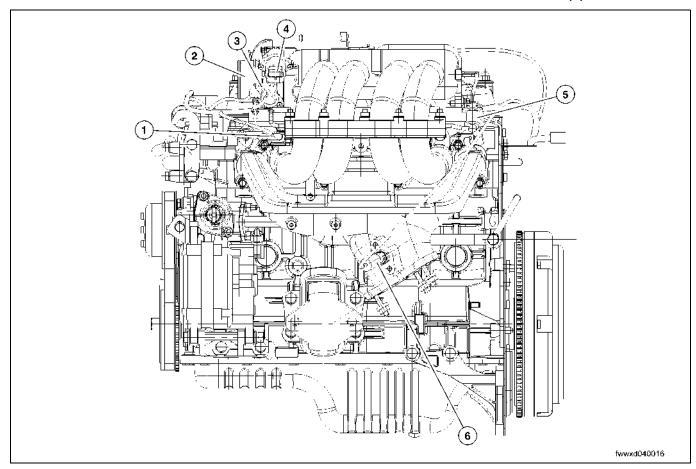
7. INSTALL 7 ENGINE COVER RETAINING BOLTS. Torque: 21 ~ 25 N·m

8. INSTALL ENGINE SURFACING.

11C

Symptom	Suspect Area	Reference		
	Piston pin and small head bushing hole clearance (Excessive bearing clearance)	Chapter 15C engine mechanical - piston and connecting rod, overhaul		
	Piston and cylinder sleeve clearance (Excessive bearing clearance)	Chapter 15C engine mechanical - piston and connecting rod, overhaul		
Engine noise	Connecting rod bearing, main bearing (Excessive bearing clearance)	Chapter 15C engine mechanical - piston and connecting rod, overhaul		
	Valve and piston (Valve touch the piston)	Chapter 15C engine mechanical - cylinder head and valve, overhaul		
	Intake and exhaust valve (Excessive clearance)	Chapter 15C engine mechanical - cylinder head and valve, overhaul		
	Piston ring (Lock, excessive wear, wrong position)	Chapter 15C engine mechanical - piston and connecting rod, overhaul		
Engine exhaust blue vapor	Piston and cylinder sleeve clearance (Excessive bearing clearance)	Chapter 15C engine mechanical - piston and connecting rod, overhaul		
	3. Engine oil (Too much)	-		
Engine exhaust	Individual cylinder is not burning	-		
white vapor	2. Diesel (Water inside)	Chapter 12C fuel - fuel filter, replacement		
	Diesel engine overload	Chapter 15C engine mechanical - precaution		
	2. Valve (Excessive clearance)	Chapter 15C engine mechanical - cylinder head and valve, overhaul		
Engine exhaust black vapor	3. Intake air filter (Blocked)	Chapter 14C intake air - intake air filter, replacement		
υιασκ ναμοι	4. EGR valve (Damaged)	Chapter 13C emission control - EGR valve, replacement		
	Injector solenoid valve (Damaged)	Chapter 12C fuel - fuel injector, overhaul		

5. ENGINE CONTROL SYSTEM MAIN COMPONENTS DISTRIBUTION GRAPHIC.(1)



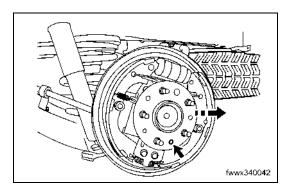
1	Manifold Absolute Pressure/Intake Air Temperature Sensor
2	Throttle Body
3	Throttle Position Sensor

4	Idle Air Control Motor
5	Fuel Regulator
6	Upstream Oxygen Sensor

AXLE SHAFT ASSY

OVERHAUL

- 1. REMOVE AXLE SHAFT ASSY LH.
- (a) Remove the rear wheel assy LH. (Refer to "Chapter 33 tire and wheel rear tire and wheel, replacement")
- (b) Remove the rear axle hub LH. (Refer to "Chapter 34 axle and propeller shaft axle hub, overhaul")



(c) Using a SST, remove the rear axle hub LH and axle shaft assy.

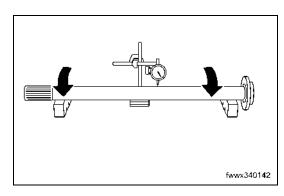
⊕NOTE

- Discard rear wheel oil seal.
- Discard bearing retainer.
- Discard bearing retainer snap ring.

2. REMOVE AXLE SHAFT ASSY RH.

1 NOTE

Remove the RH side by the same procedures as the LH side.



3. INSPECTION AXLE SHAFT ASSY.

(a) Using V-block and dial indicator, measure the diameter runout of the axle shaft assy and flange end face runout.

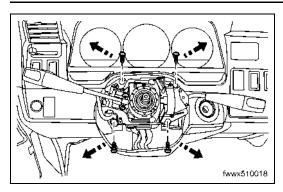
 $\begin{aligned} \text{Diameter runout:} & \leqslant 2.0 \text{ mm} \\ \text{End face runout:} & \leqslant 0.2 \text{ mm} \end{aligned}$

If the diameter runout and end face runout are out of the specification, correct the axle shaft assy. Replace the new one if necessary.

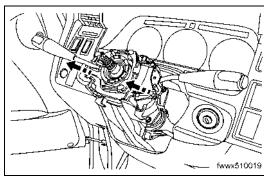
- (b) Using magnetic testing method, inspect axle shaft whether there is crack.
- (c) Check the axle shaft splines for fracture, worn an deformation.

If any fault is detected, replace with a new axle shaft assy.

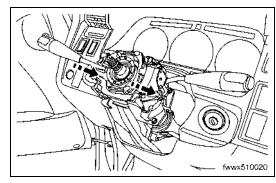




(d) Remove 4 screws.

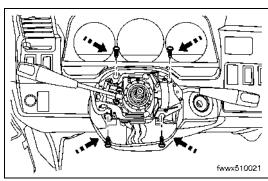


(e) Remove the combination switch assy.

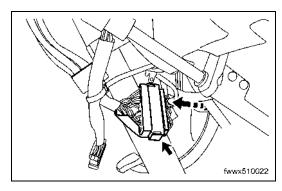


7. INSTALL COMBINATION SWITCH ASSY.

(a) Install the combination switch to steering column assy.



(b) Tighten 4 screws.



(c) Connect the connector , tie the wire harness and installthe connector to its bracket.

System Description

Parking Light

The current flows through the coil of tail light relay in body junction box, and then to pin A2 of combination switch. When the combination switch is set tail light or headlamp (Low Beam/High Beam) position, the current flows output pin A11 of combination switch, to pin 2 of junction connector C067, the power is ground at pin 1 of junction connector C067. The coil of tail light relay creates a magnetic field, and switch is activated. The current flows through switch of tail light relay, and through the tail fuse in body junction box, to pin 2 of front combination lamp LH and pin 2 of front combination lamp RH. The power is ground at pin 5 of front combination lamp RH. This enables parking light to operate.

Tail Light

The current flows through the coil of tail light relay in body junction box, and then to pin A2 of combination switch. When the combination switch is set tail light or headlamp (Low Beam/High Beam) position, the current flows output pin A11 of combination switch, to pin 2 of junction connector C067, the power is ground at pin 1 of junction connector C067. The coil of tail light relay creates a magnetic field, and switch is activated. The current flows through switch of tail light relay, and through the tail fuse in body junction box, to pin 5 of rear combination lamp LH and pin 5 of rear combination lamp RH. The power is ground at pin 6 of rear combination lamp RH. This enables tail light to operate.

License Light

The current flows through the coil of tail light relay in body junction box, and then to pin A2 of combination switch. When the combination switch is set tail light or headlamp (Low Beam/High Beam) position, the current flows output pin A11 of combination switch, to pin 2 of junction connector C067, the power is ground at pin 1 of junction connector C067. The coil of tail light relay creates a magnetic field, and switch is activated. The current flows through switch of tail light relay, and through the tail fuse in body junction box, to pin 2 of license lamp, and through th license light, the power is ground at pin 1 of license lamp. This enables license light to operate.

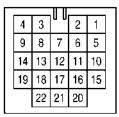
Service Hints

- C008 Combination Switch (Light Control)
 - A2 A11: Closed with the combination switch at Headlamp position (High Beam and Low Beam).
- C067 Junction Connector
 - 1 2: Conduction

☐ : Parts Location

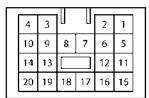
Code	Wire Harness	Code	Wire Harness
C002	Instrument Panel Wire Harness	C067	Instrument Panel Wire Harness
C005	Instrument Panel Wire Harness	F010	Roof Wire Harness
C008	Instrument Panel Wire Harness	F011	Roof Wire Harness
C035	Instrument Panel Wire Harness	J003	Rear Hatch Wire Harness





C100 to Roof Wire Harness

Code	Color	Function	Qualifier	Code	Color	Function	Qualifier
1	L	-		12	-	-	
2	R-Y	-		13	L-B	-	
3	G	-		14	-	-	
4	R	-		15	L-W	-	
5	L-R	-		16	-	-	
6	R	-		17	W-B	-	
7	L	-		18	L-Y	-	
8	W	-		19	R-Y	-	
9	Υ	-		20	G-W	-	
10	W-G	-		21	G-Y	-	
11	L-W	-		22	G-R	-	



C101 to Engine Room Wire Harness

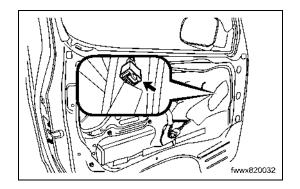
Code	Color	Function	Qualifier	Code	Color	Function	Qualifier
1	Y-B	-		11	BR-W	-	
2	B-R	-		12	R-B	-	
3	Υ	-		13	В-О	-	
4	Р	-		14	V-W	-	
5	L-R	-		15	W	-	
6	L-W	-		16	Y-G	-	
7	W-G	-		17	L	-	
8	R-Y	-		18	W-G	-	
9	G-R	-		19	W-R	-	
10	G-R	-		20	B-Y	-	



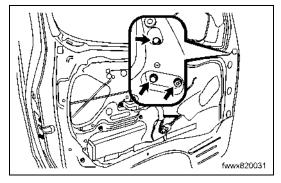
7-

REPLACEMENT

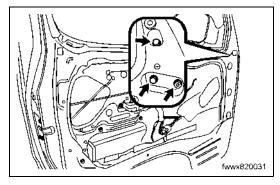
1. REMOVE FRONT DOOR INNER GUARD BOARD LH. (Refer to "Chapter 88 exterior and interior trim - vehicle door inner guard board, replacement")



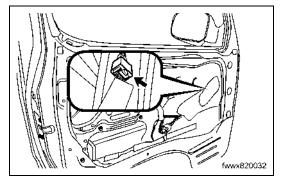
- 2. REMOVE OUTSIDE REAR VIEW MIRROR LH.
- (a) Disconnect outside rear view mirror LH connector.



- (b) Loosen 3 retaining bolts.
- (c) Remove outside rear view mirror LH.



- 3. INSTALL OUTSIDE REAR VIEW MIRROR LH.
- (a) Tighten 3 retaining bolts.

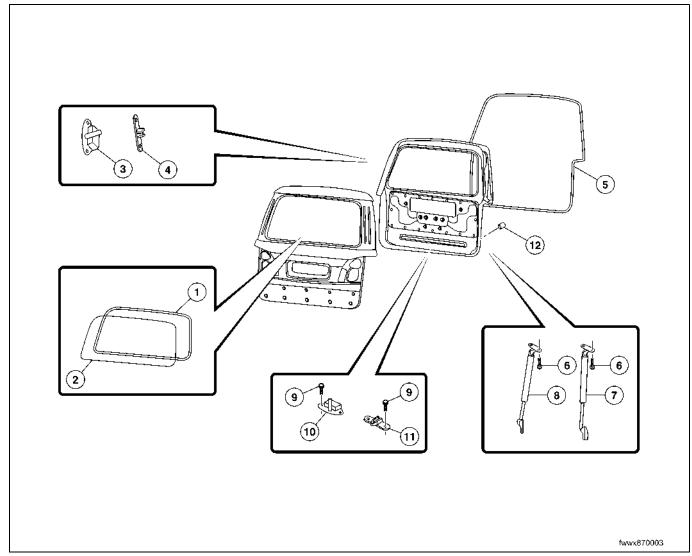


(b) Connect outside rear view mirror LH connector.

- 4. INSTALL FRONT DOOR INNER GUARD BOARD LH. (Refer to "Chapter 88 exterior and interior trim vehicle door inner guard board, replacement")
- 5. CHECK IF ELECTRIC REAR VIEW MIRROR FUNCTION IS NORMAL.



REAR HATCH COMPONENTS



1	Rear Window Weatherstrip	
2	Rear Window Glass	
3	Rear Hatch Convex Limit Assy (Side)	
4	Rear Hatch Concave Limit Assy (Side)	
5	Rear Hatch Weatherstrip	
6	Bolt	

7	Hatch Bar Assy RH	
8	Hatch Bar Assy LH	
9	Bolt	
10	Rear Hatch Concave Limit Assy (Middle)	
11	Rear Hatch Convex Limit Assy (Middle)	
12	Damping Block	