

جزوه آموزشی سیستم های خودروی X22



مدیریت فنی و مهندسی
کد : EL-95-01
ویرایش اول

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مشخصات موتور خودروی X22

1. Engine model: SQRD4G15B.
2. The SQRD4G15B engine is developed on the basis of the SQR477F engine.
3. VVT and EGR valve, featuring energy saving and environmental protection.
4. Electronic thermostat, which controls the coolant temperature depending on the operating condition of the engine, and thus improves economy.
5. Single overhead camshaft, multi-point electronic control gasoline sequential injection, independent ignition.
6. Marelli EFI system

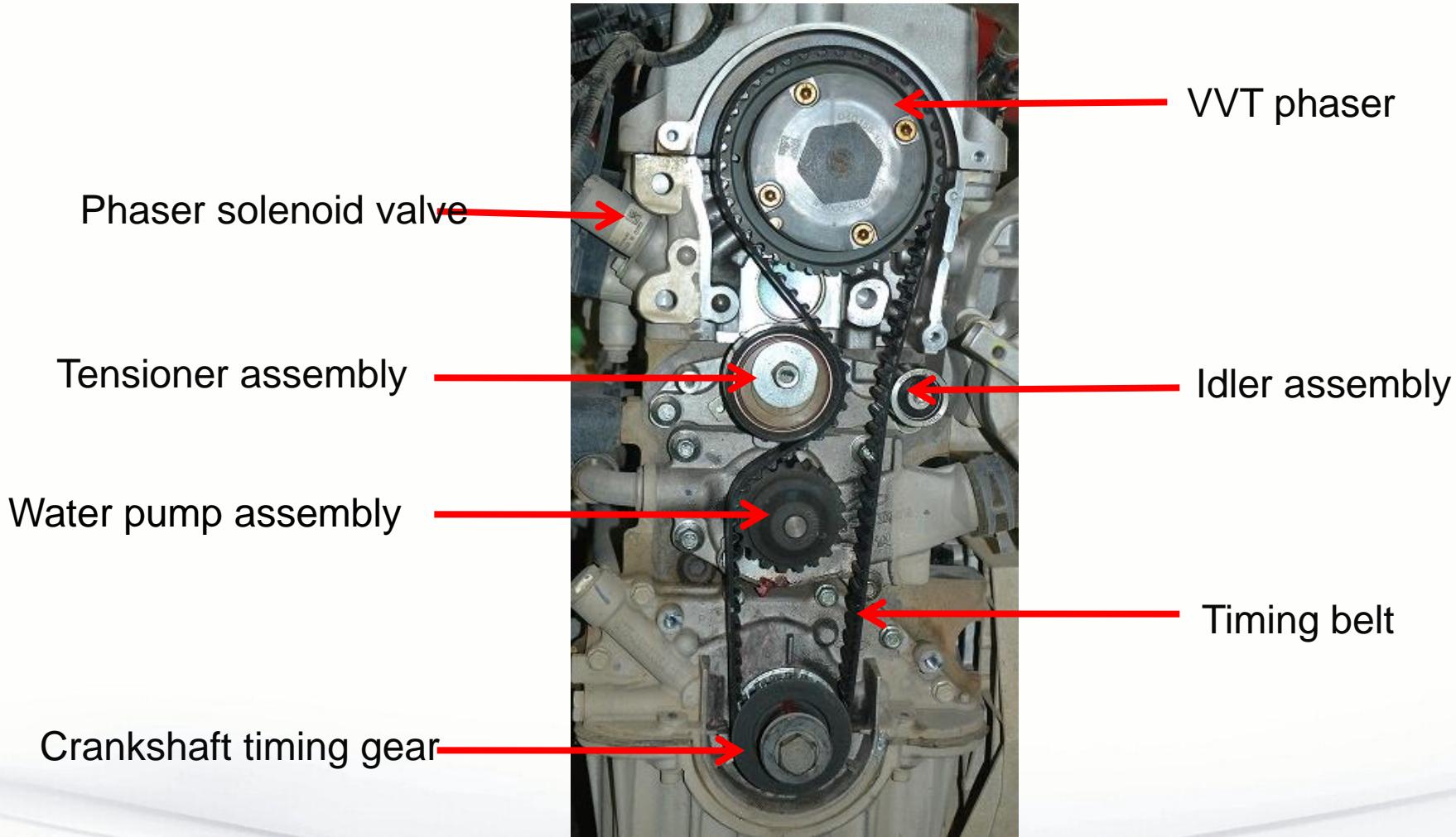


مشخصات موتور خودروی X22

Engine model	SQRD4G15B	SQR477F
Engine type	Vertical, inline four-cylinder, water-cooled, single overhead camshaft, VVT, EGR	Vertical, inline four-cylinder, water-cooled, single overhead camshaft
Cylinder diameter (mm)	77.4	77.4
Piston stroke (mm)	79.52	79.52
Displacement (ml)	1497	1497
Compression ratio	11.4:1	10.5:1
Rated power (kW)	78	80
Speed at rated power (r/min)	6000	6000
Max. net power (kW)	78	80
Speed at max. net power (r/min)	6000	6000
Max. torque (N·m)	135	140
Speed at max. torque (r/min)	2750	4500
Min. fuel consumption (g/kw·h)	260	260

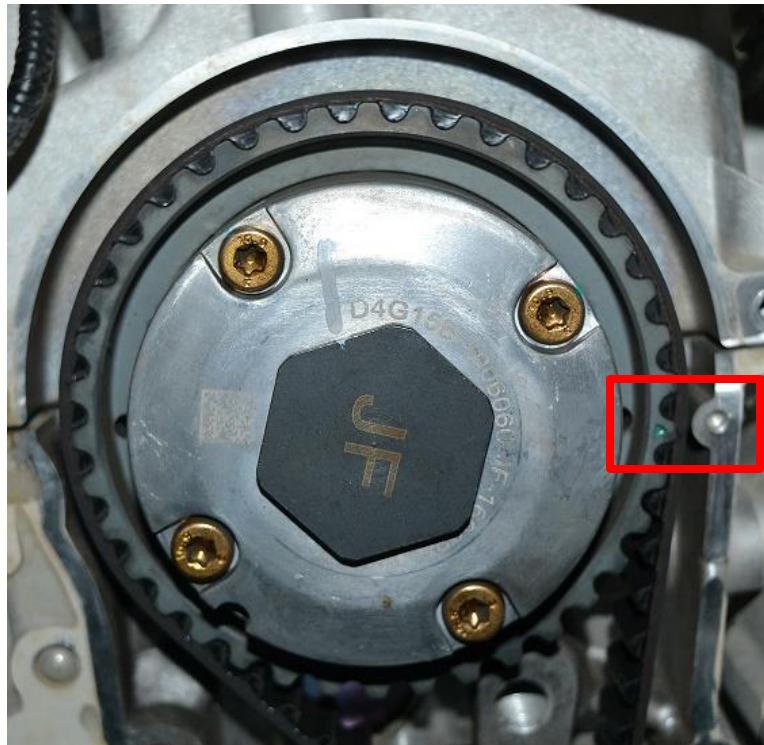
سیستم تایمینگ موتور X22

Installation position diagram of timing system



Q: Compared with the SQR477F engine, what are the differences?

Alignment marks for timing

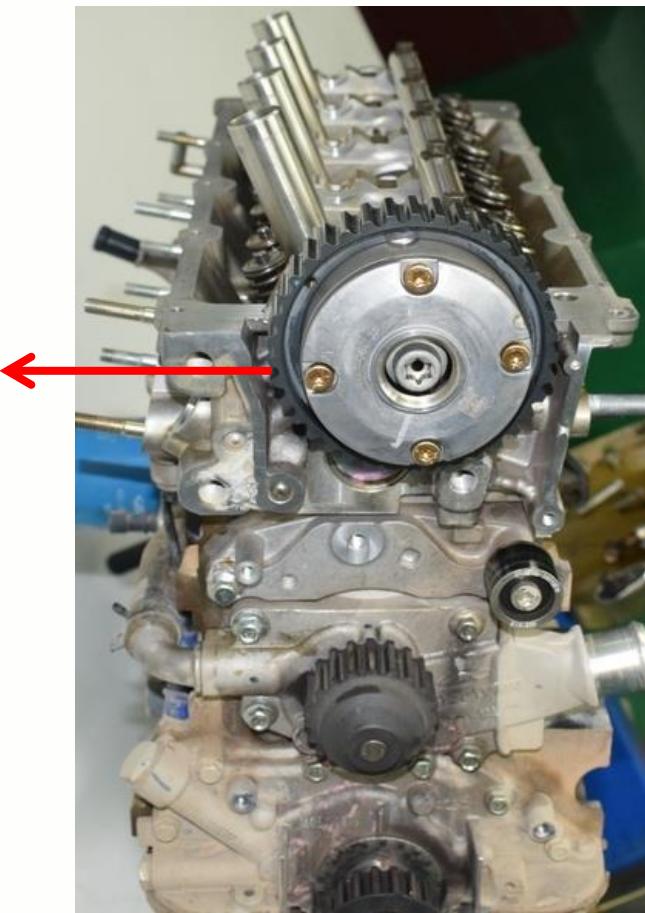
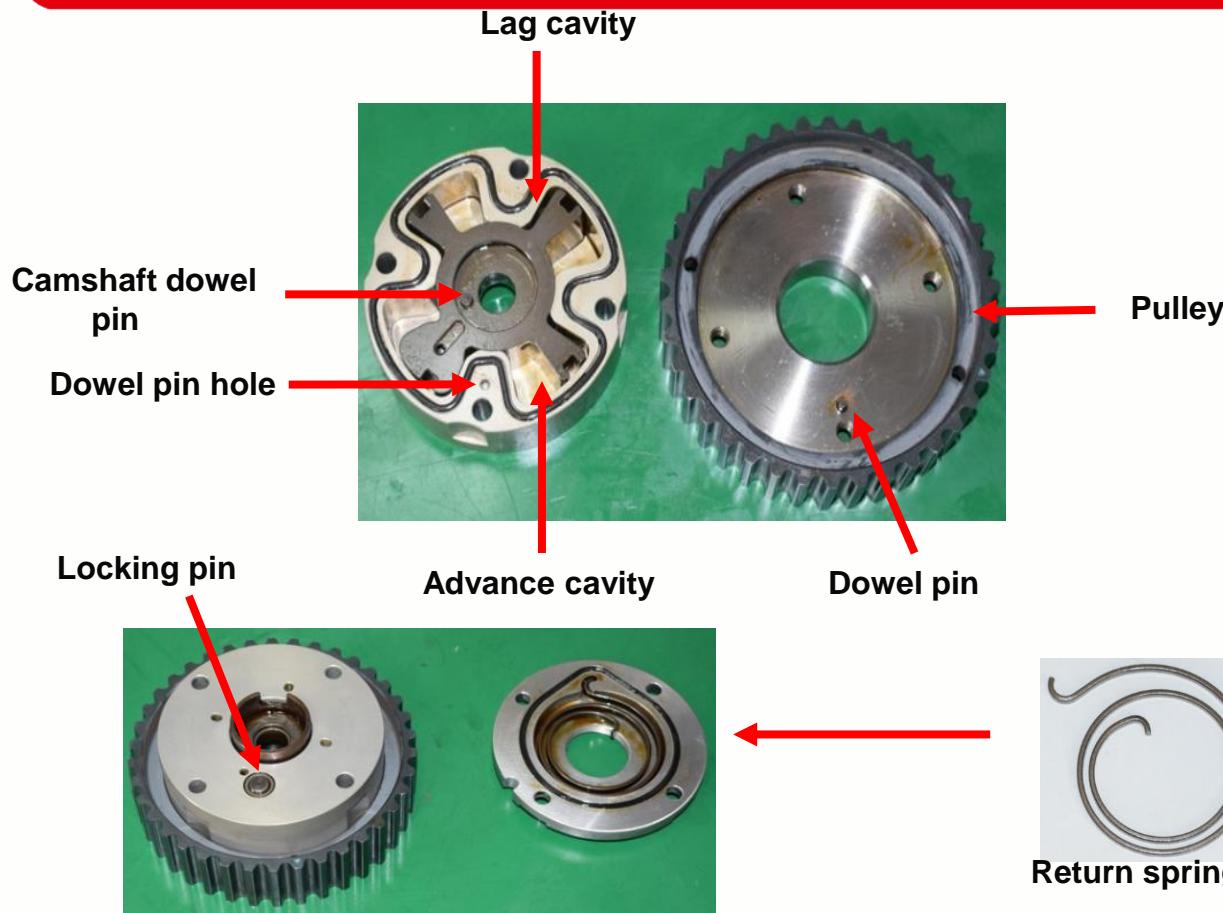


Alignment mark of camshaft phaser



Alignment mark of crankshaft timing gear

Q: Compared with the SQR477F engine, what are the differences?



CAUTION: Do not disassemble the phaser at any time during servicing. It must be replaced as an assembly!

Q: Why is the return spring used?

سیستم تایمینگ موتور X22

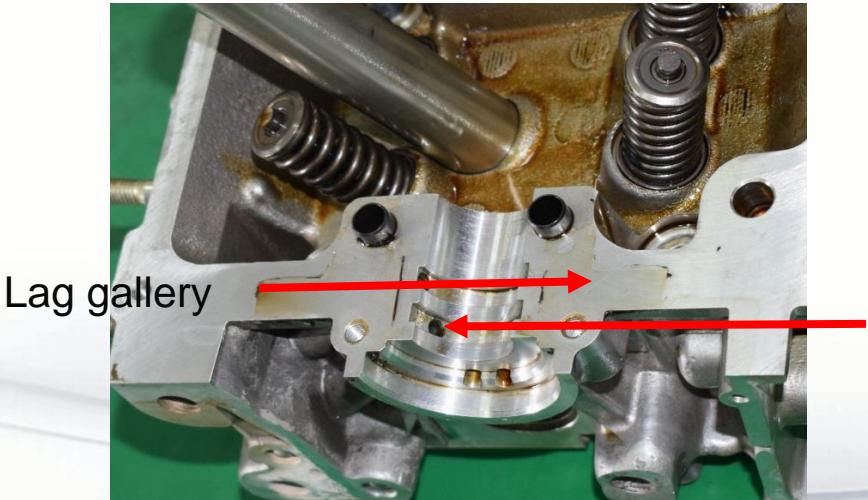
Initial position of phaser

- The initial position of the phaser is the maximum **advance** position.

Return spring

- Make the phaser return smoothly.
- Adjust the phaser.

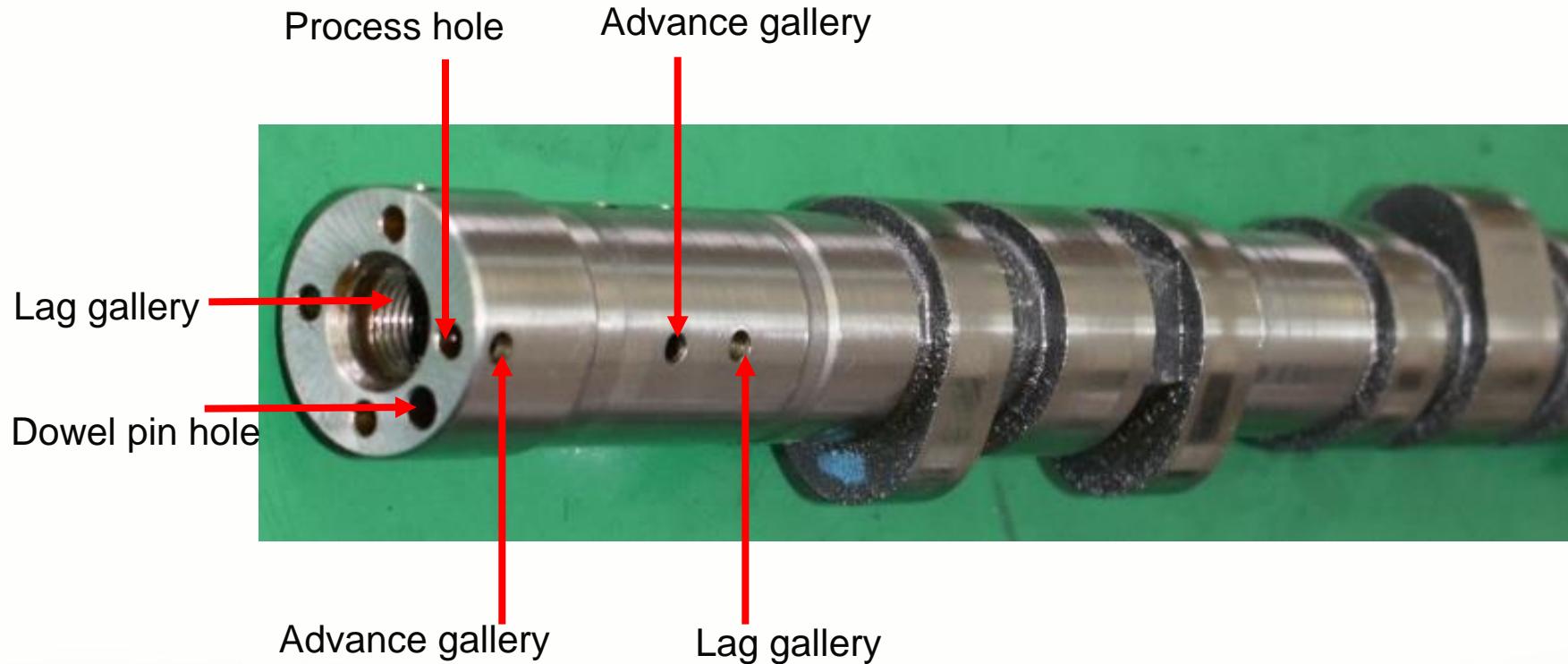
Cylinder head galleries



Advance cavity Lag cavity



Camshaft galleries



NOTE: Compared with the SQR477F engine, the valve lift and timing of the camshaft are different, and the number of the galleries is increased.

Valve lift: D4G15B: 8mm; 477F: 5mm.

Installation of phaser:

Step 1

Step 2

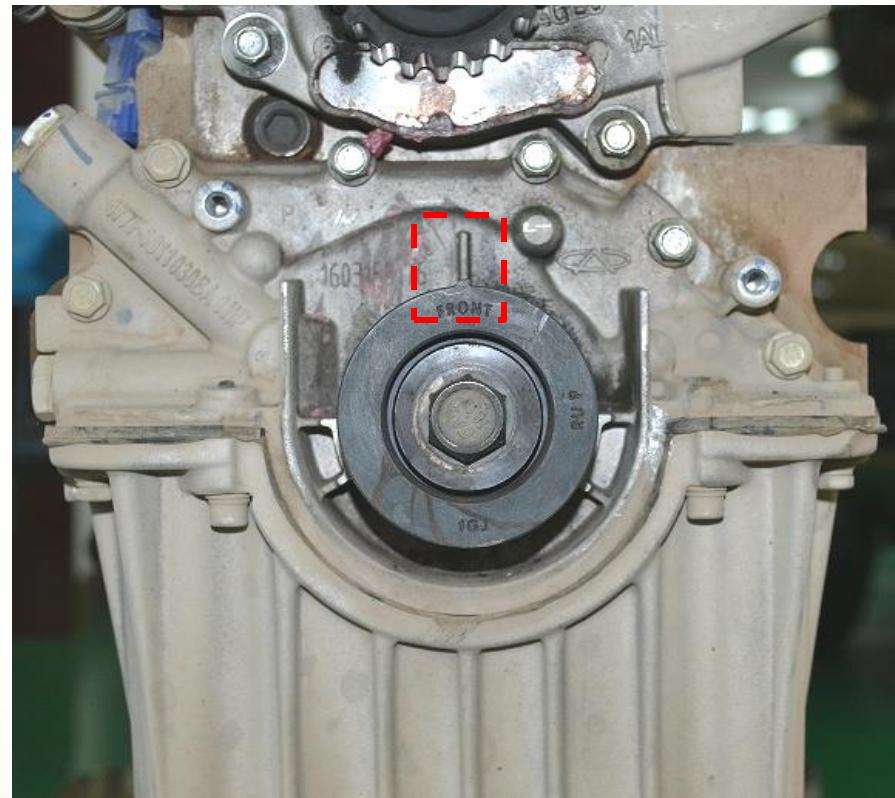
Step 3

Step 4

Step 5

Step 6

- Before the phaser is installed, first crank the crankshaft timing gear to make the TDC mark on the crankshaft timing gear face up, that is, to ensure that the crankshaft rotates to the TDC of the No. 1 cylinder.



Installation of phaser:

Step 1

Step 2

Step 3

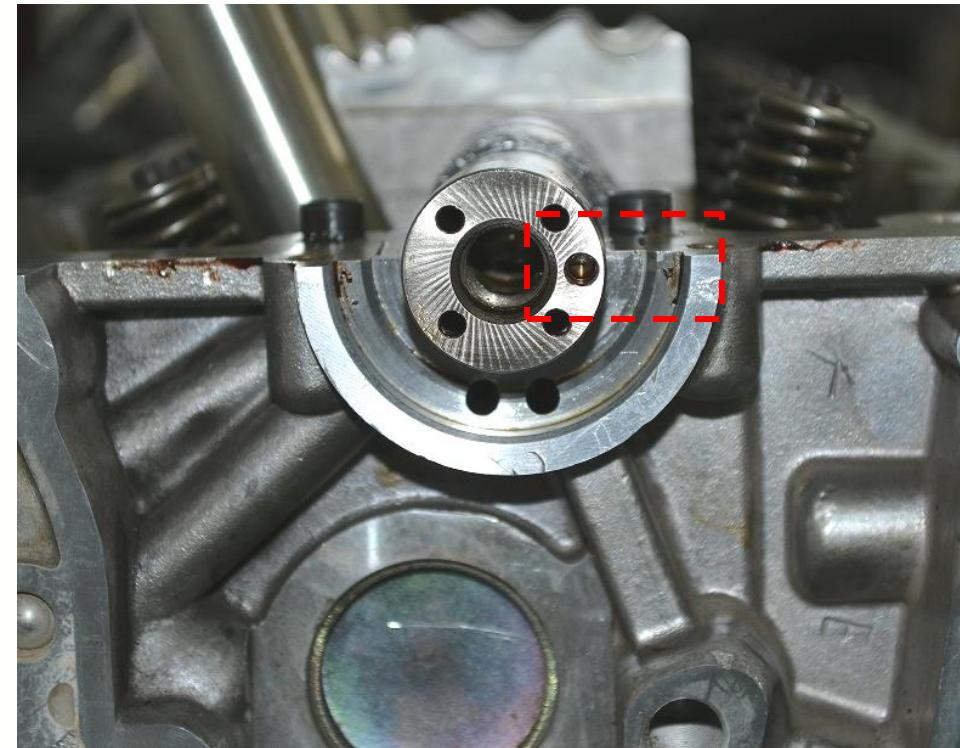
Step 4

Step 5

Step 6

■ Installation of camshaft:

- Make the camshaft dowel pin hole flush with the camshaft cover and towards the right.



Installation of phaser:

Step 1

Step 2

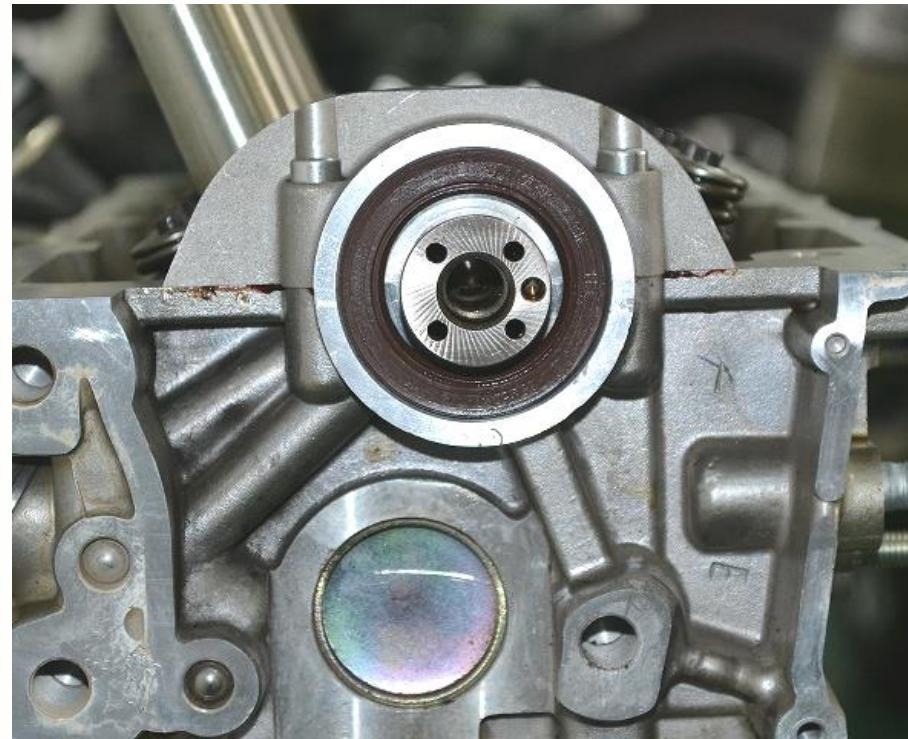
Step 3

Step 4

Step 5

Step 6

- Installation of camshaft cover and camshaft seal:
 - Use a special tool to install the seal.
 - Oil the seal before installation.
 - Pay attention to seal clearance during installation.



سیستم تایمینگ موتور X22

Installation of phaser:

Step 1

Step 2

Step 3

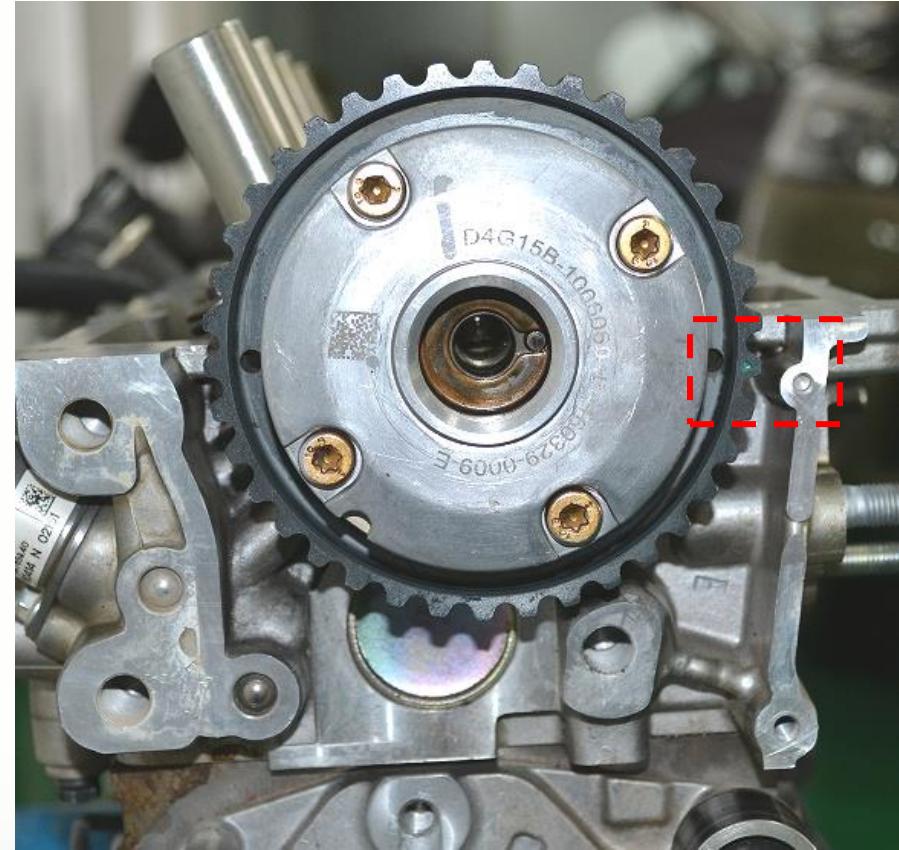
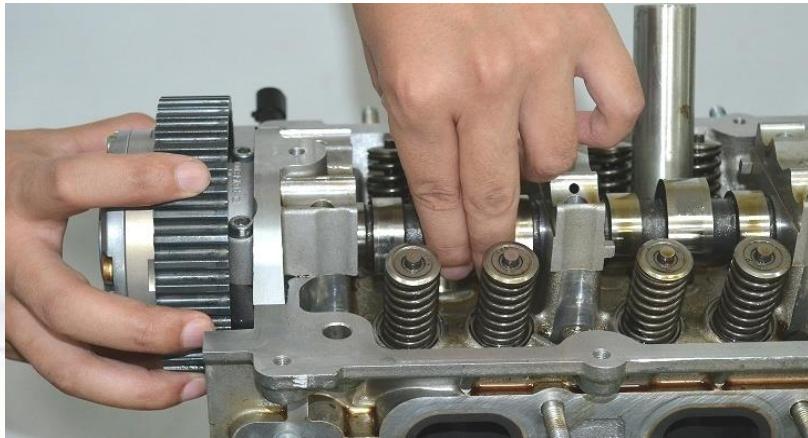
Step 4

Step 5

Step 6

■ Installation of phaser:

- Turn left and right by hand to check if the camshaft dowel pin and pin hole are in place.
- Align the mark on the phaser with the hole mark on the cylinder head.



سیستم تایمینگ موتور X22

Installation of phaser:

Step 1

Step 2

Step 3

Step 4

Step 5

Step 6



■ Installation of phaser fixing bolt:

- When the bolt is tightened, secure the camshaft with a wrench.
- This is a hexagon lobular socket hollow bolt.
- Tightening torque: **$120 \pm 6 \text{ N}\cdot\text{m}$** .
- The bolt cannot be reused.



سیستم تایمینگ موتور X22

Installation of phaser:

Step 1

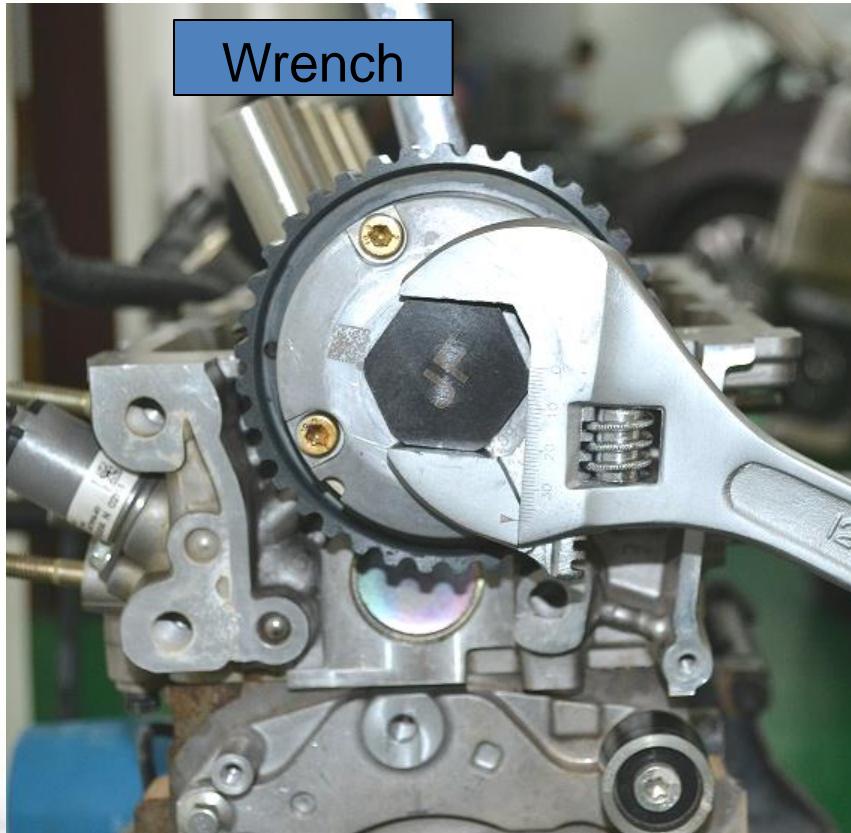
Step 2

Step 3

Step 4

Step 5

Step 6



■ Installation of phaser plug:

- When the plug is tightened, secure the camshaft with a wrench.
- Tightening torque: $30\pm5\text{N}\cdot\text{m}$.
- Check if the plug seal is in good condition before installation.



NOTE: The removal procedure is the reverse of the installation procedure.

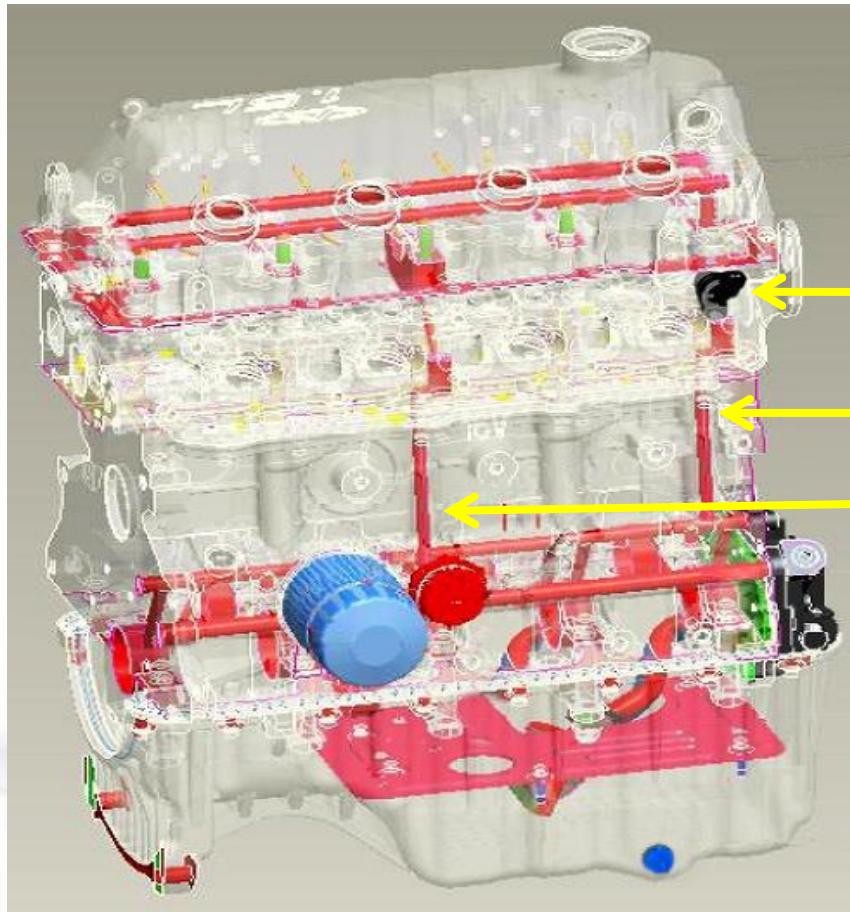
X22 روغنکاری موتور

System Pressures

Condition	Pressure (bar)
Idling (650 ± 50 r/min, oil temperature 90°C)	More than 1.5
High Idling (4000 ± 50 r/min, oil temperature 100°C)	More than 3.5

Oil Specifications

Engine Type	SQRD4G15B
Oil Capacity (L)	3.9 ± 0.5
Oil Specifications	Summer: SAE 10W-40 (SL grade or higher) Winter: SAE 5W-40 (SL grade or higher)



Shir Brqi VVT

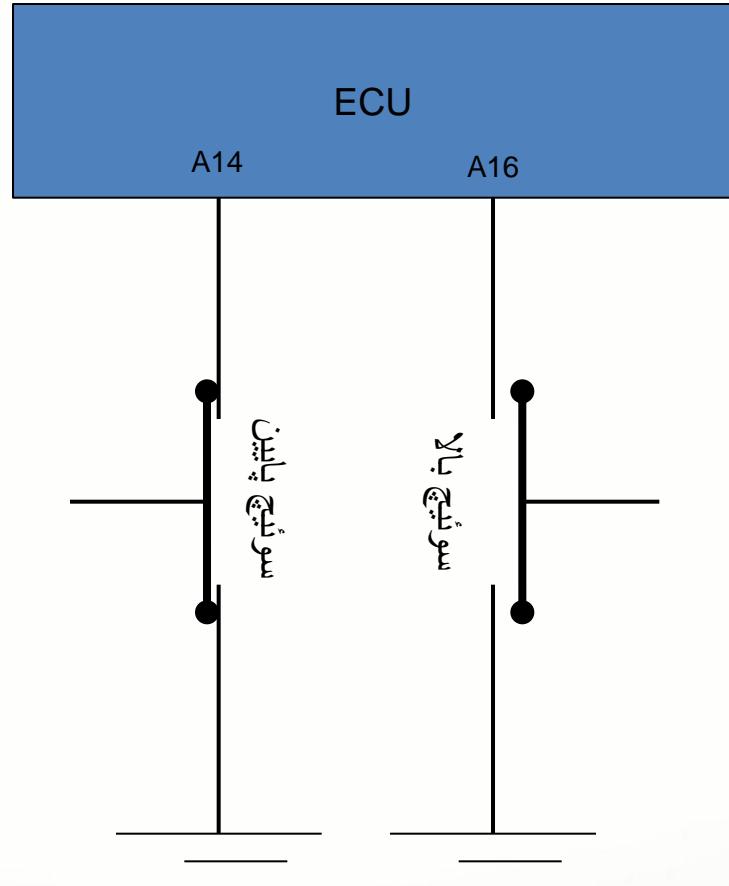
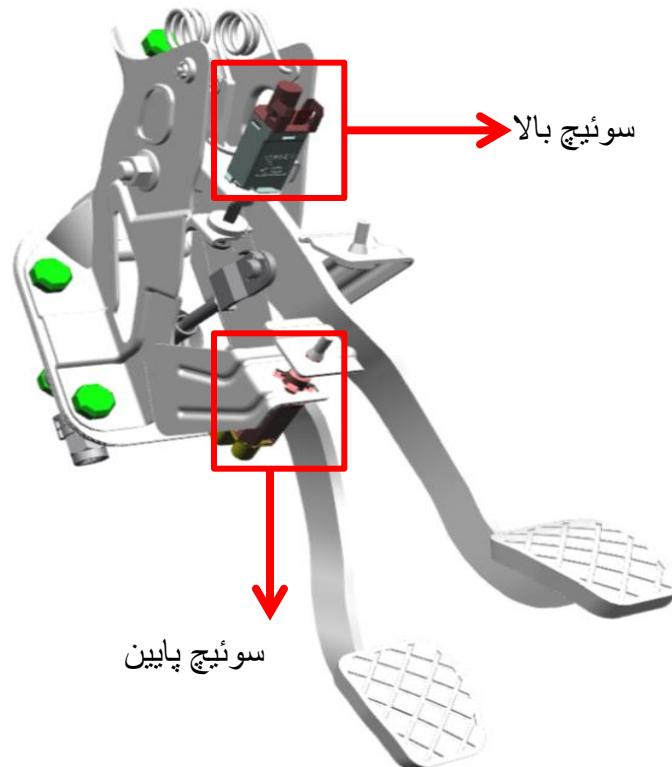
مدار روغن سیستم VVT

مدار روغن مجموعه سرسیلندر

NOTE: 477F only has the middle one.

DVVT also has only one.

Installation position: on the clutch pedal.

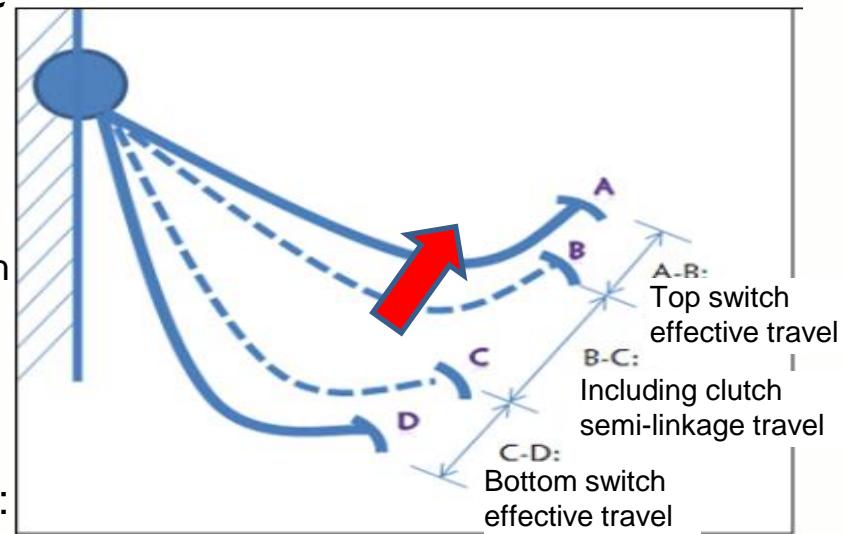


Circuit diagram

میکروسوئیچ پدال کلاچ

عملکرد:

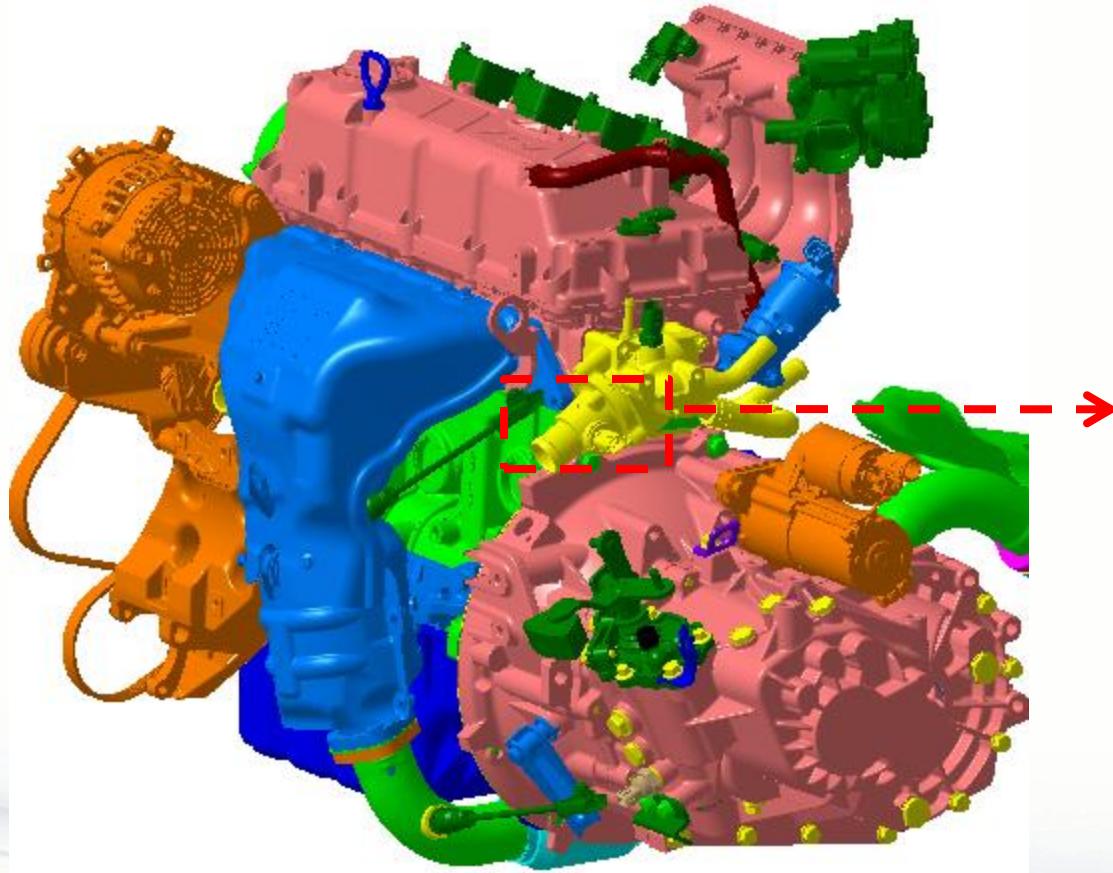
- Adjust the engine torque output.
- Reduce shift shock.
- Accelerate the engine or increase its torque at start.
- Accelerate the engine to 850 RPM, or 950 RPM with A/C on.
- No acceleration when the car speed is up to 5km/h.



Control strategy for standing start acceleration:

موقعیت پدال کلاچ	ابتدا(اولیه)	وسط	پایین	وسط	ابتدا(اولیه)
سوئیچ بالا	1	0	0	0	1
سوئیچ پایین	0	0	1	0	0
شتاپگیری	N	N	N	Y	N

Installation position: on the left side of the engine; it can only be replaced as an assembly during service.



ترموستات الکترومکانیکی

عملکرد:

Control the minor and major cycles of the cooling system through the duty cycle depending on the operating condition of the engine.

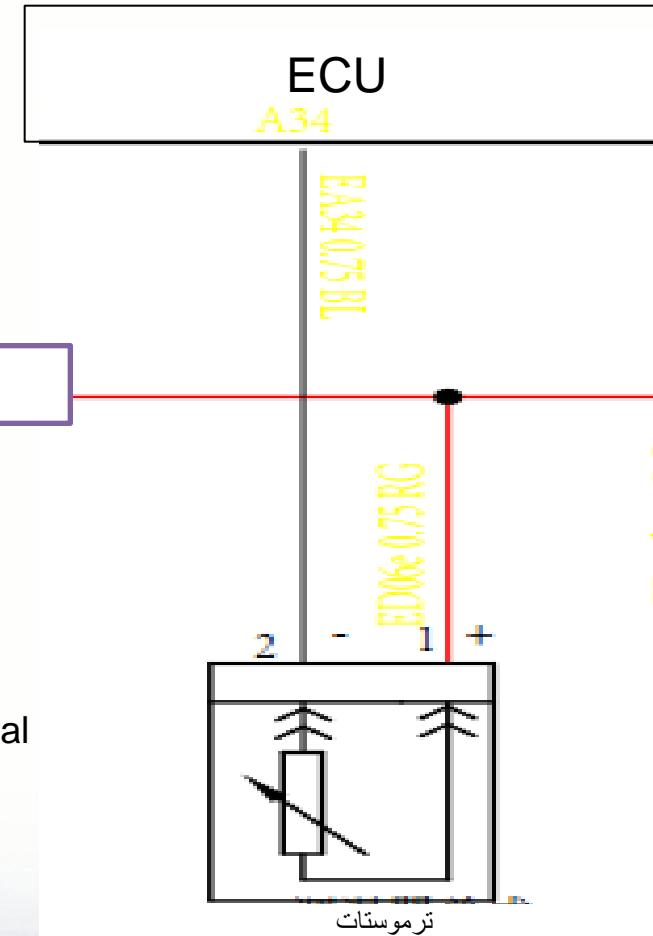
Circuit diagram

Internal components:

Paraffin and heating resistor.

Opening conditions:

- (1) Under low-speed low-load conditions, it opens at 100° C to improve fuel economy.
- (2) Under high-speed high-load conditions, it opens at 80° C to ensure engine safety.
- (3) If some line fails, it can be mechanically opened, and the initial opening temperature and full opening temperature should be respectively $105 \pm 2^{\circ} \text{ C}$ and 120° C .
- (4) The thermostat opening stroke is 8mm.



Calculation for opening temperature of electronic thermostat:

- Formula: $\square T = T_{\text{Target}} - T_{\text{Estimate}}$
- If $\square T > 3^{\circ} \text{ C}$, the ECU will not control the thermostat to open.
- If $-1^{\circ} \text{ C} < \square T < 3^{\circ} \text{ C}$, the duty cycle will control the thermostat to open.
- If $\square T < -1^{\circ} \text{ C}$, the ECU will control the thermostat to open fully.

T_{Target} : The target coolant temperature at which the electronic thermostat starts to operate, which is calculated based on the current engine load and combustion torque.

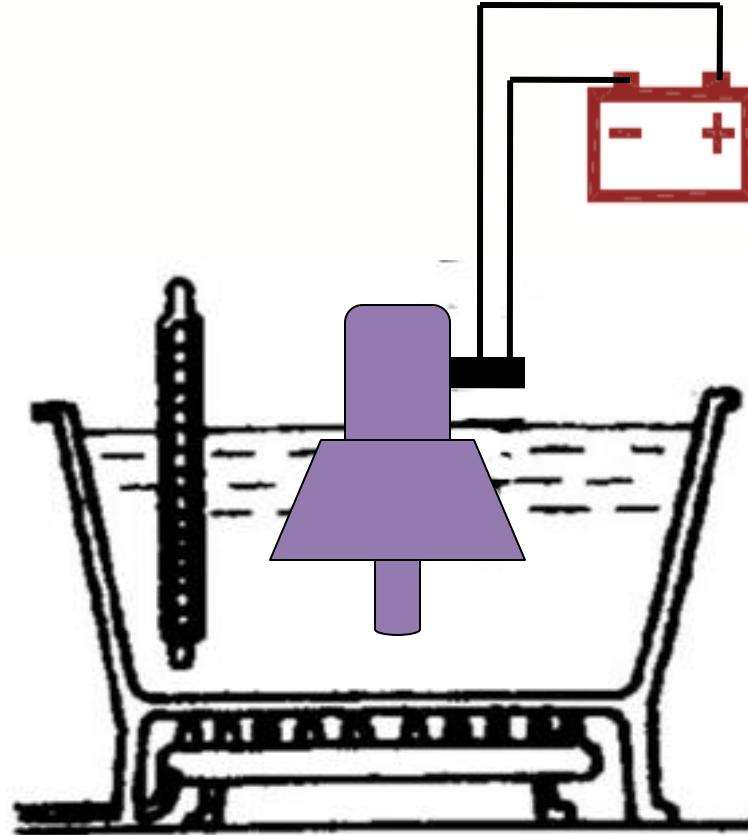
T_{Estimate} : The coolant temperature that the engine will reach in the next step, which is estimated according to the current actual coolant temperature and the coolant temperature trends; the error of the estimated value is $\pm 1^{\circ} \text{ C}$.

Inspection methods:

- Measure that the resistance at room temperature is 15Ω .
- Heat the thermostat in the water and power it on to see if it can be opened.
- Note that each power-on shall not last for more than 60S.

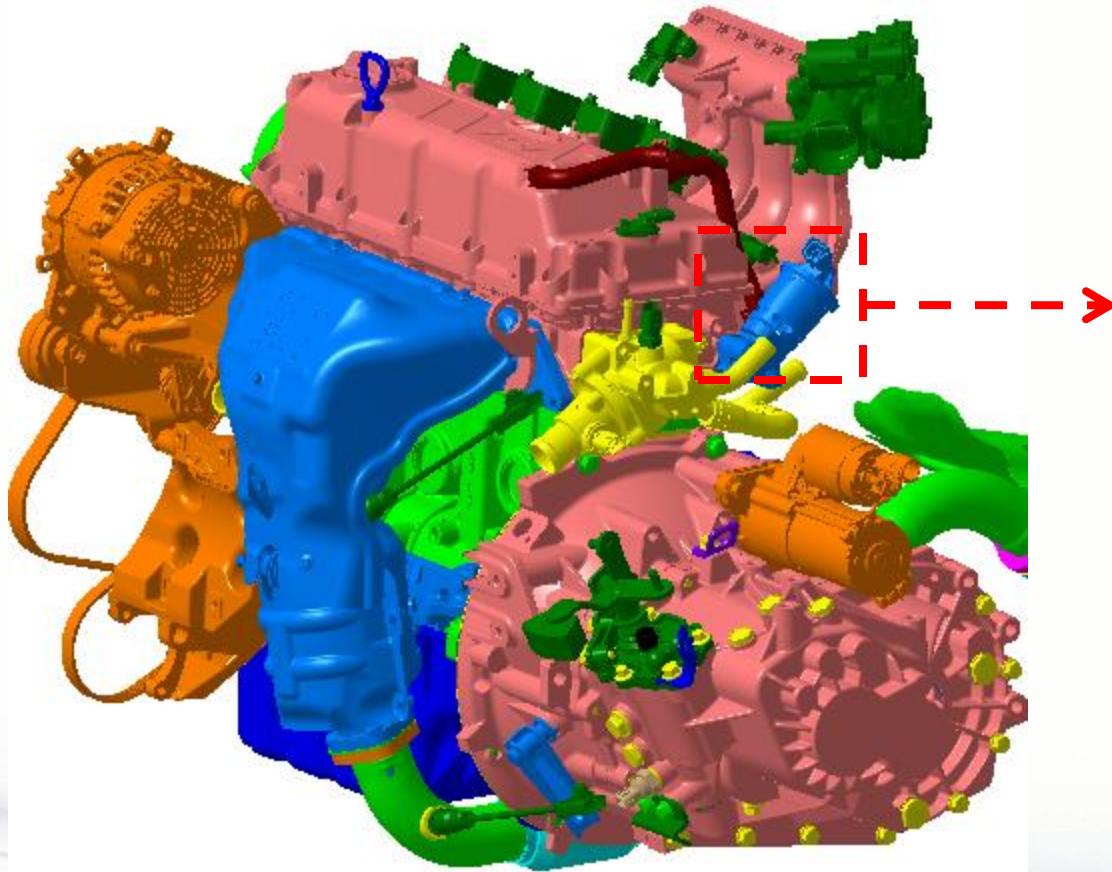
Possible faults

1. The engine fault lamp stays on.
2. The engine coolant temperature is high or

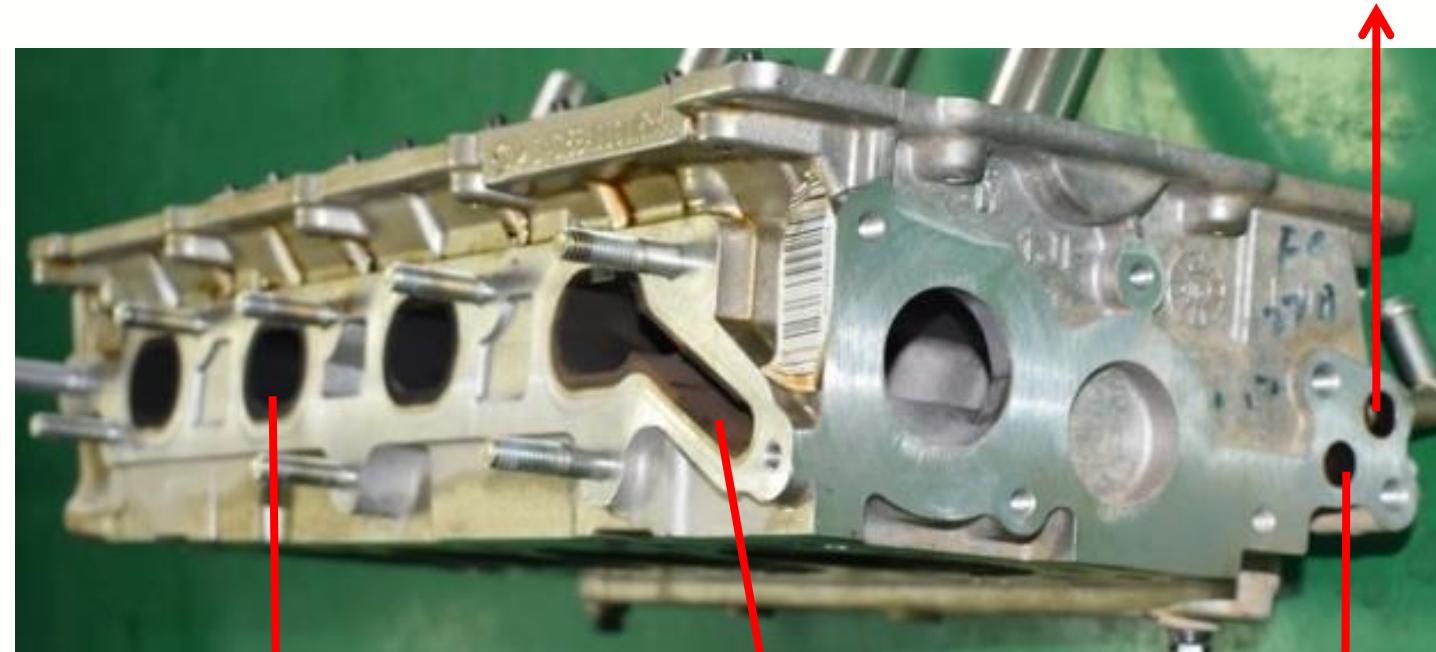


شیر برقی EGR

Installation position: on the left side of the engine, on the cylinder head.



EGR valve passages

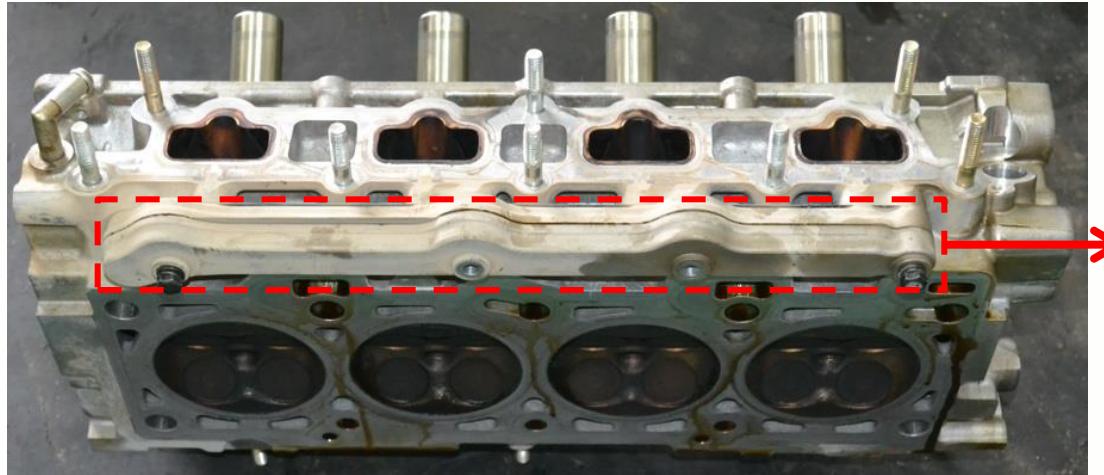


Exhaust
passage outlet

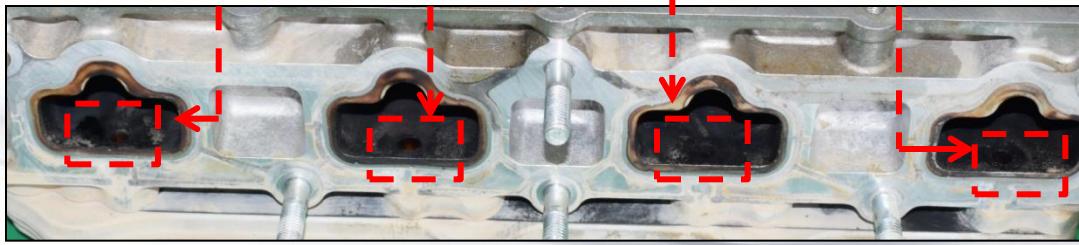
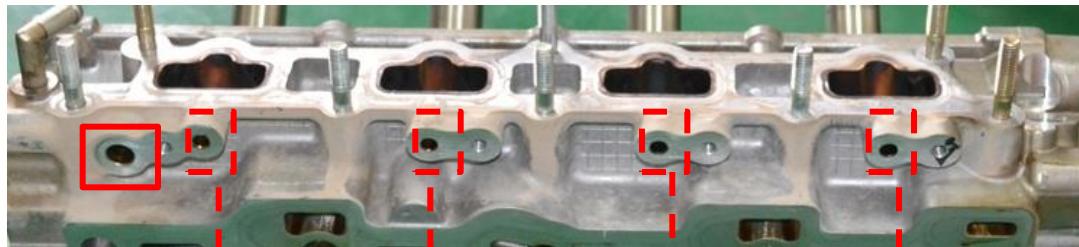
Cylinder head exhaust
gas passage inlet

EGR valve exhaust gas outlet

EGR valve passages



Exhaust gas cover



Outlet
Inlet

عملکرد:

- The EGR system is also called the exhaust gas recirculation system.
- Part of the exhaust gas is recirculated back to the intake manifold, and enters the combustion chamber to lower the combustion temperature, thereby reducing the generation of NOx.
- The A13T is applied with the electromagnetically driven E

شرایط عملکرد شیربرقی EGR

(1) Intake air temperature: -10~120° C,

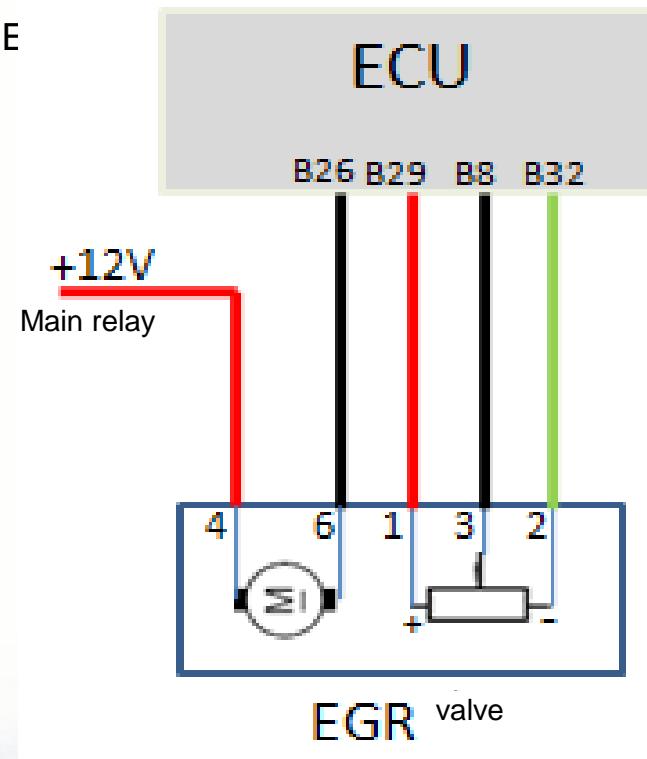
Coolant temperature: > 64° C.

(2) 20s delay after start.

(3) Battery voltage: 9~15.2V.

(4) Manifold pressure: > 300mbar.

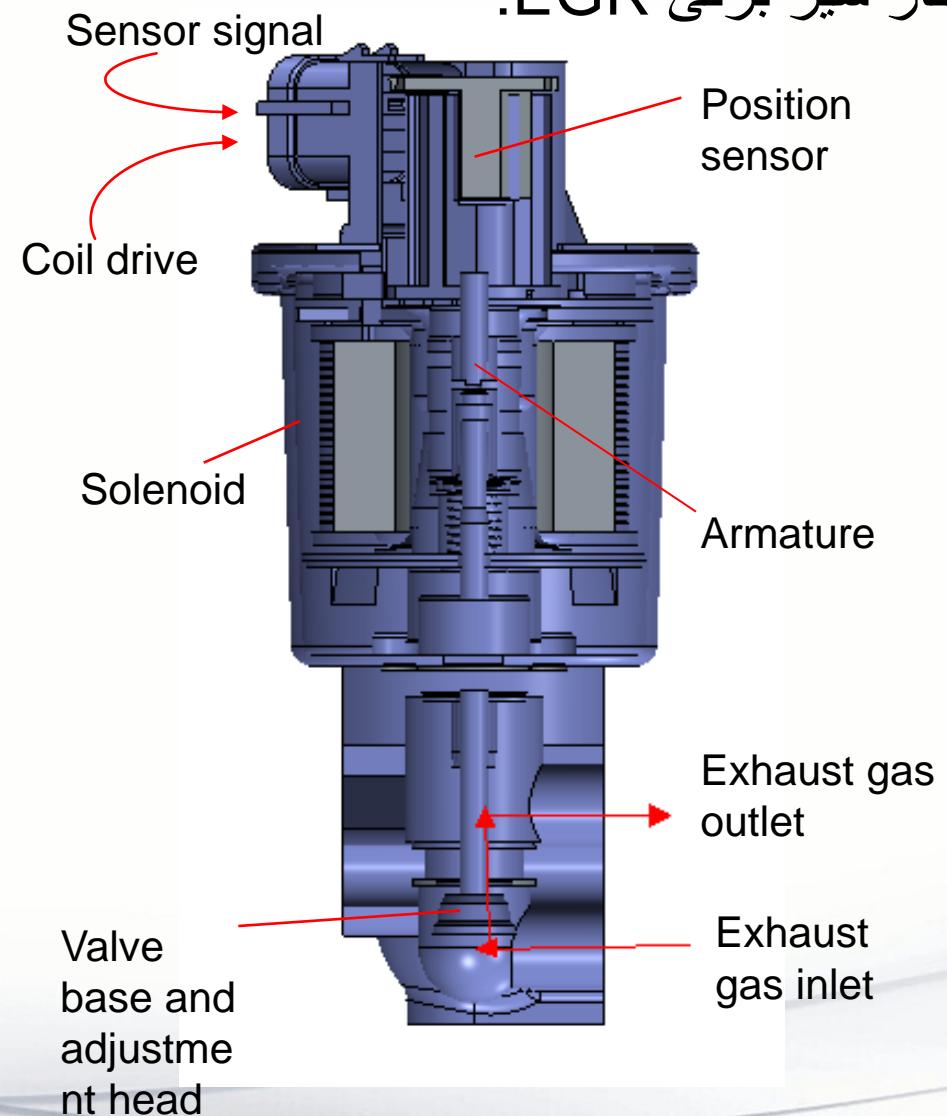
(5) Engine speed: 400~5600rpm



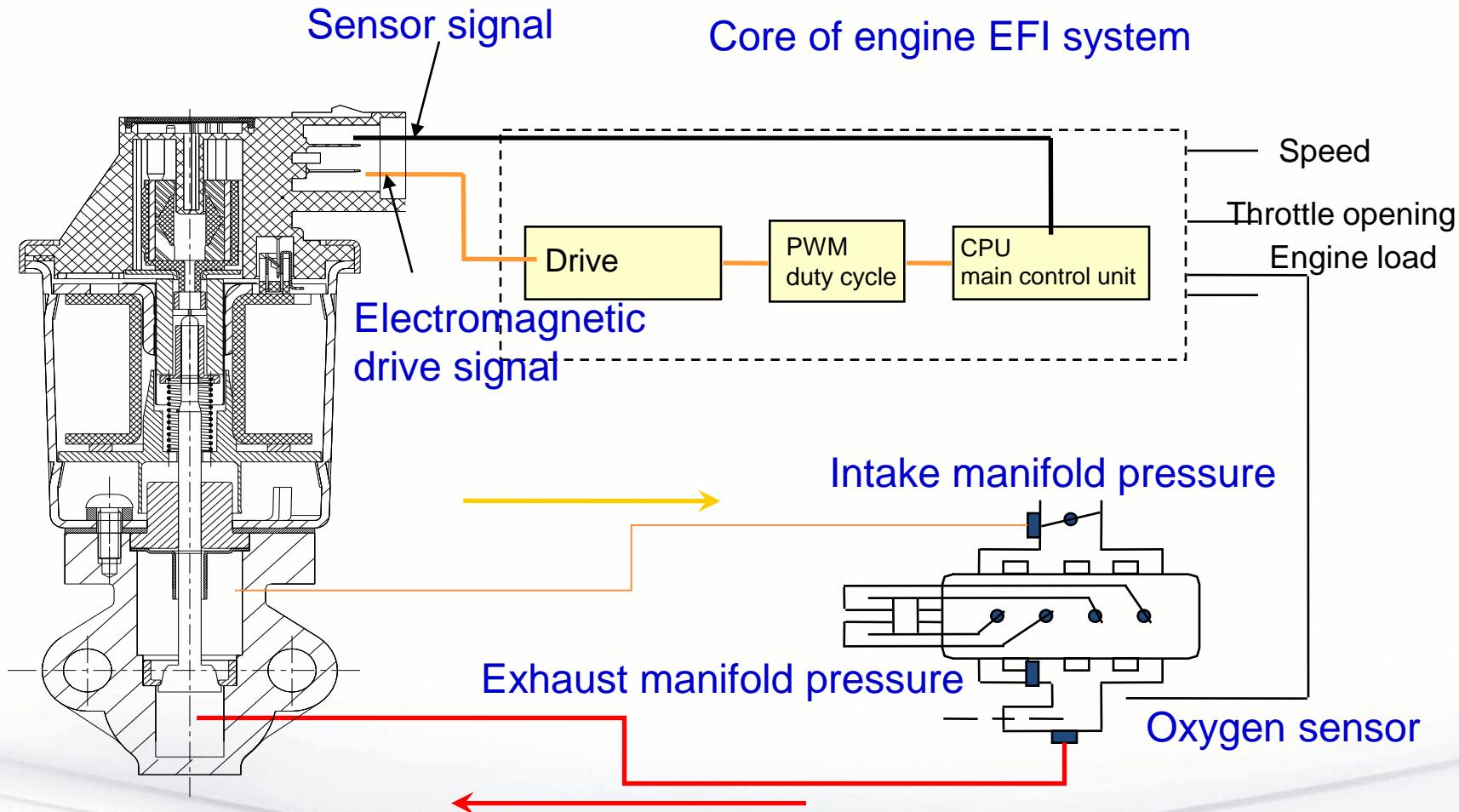
Circuit diagram

ساختمان شیر برقی EGR

- The valve position is controlled by a solenoid.
- The valve opening is maintained by the position sensor signal.
- Adjustment method: PWM signal

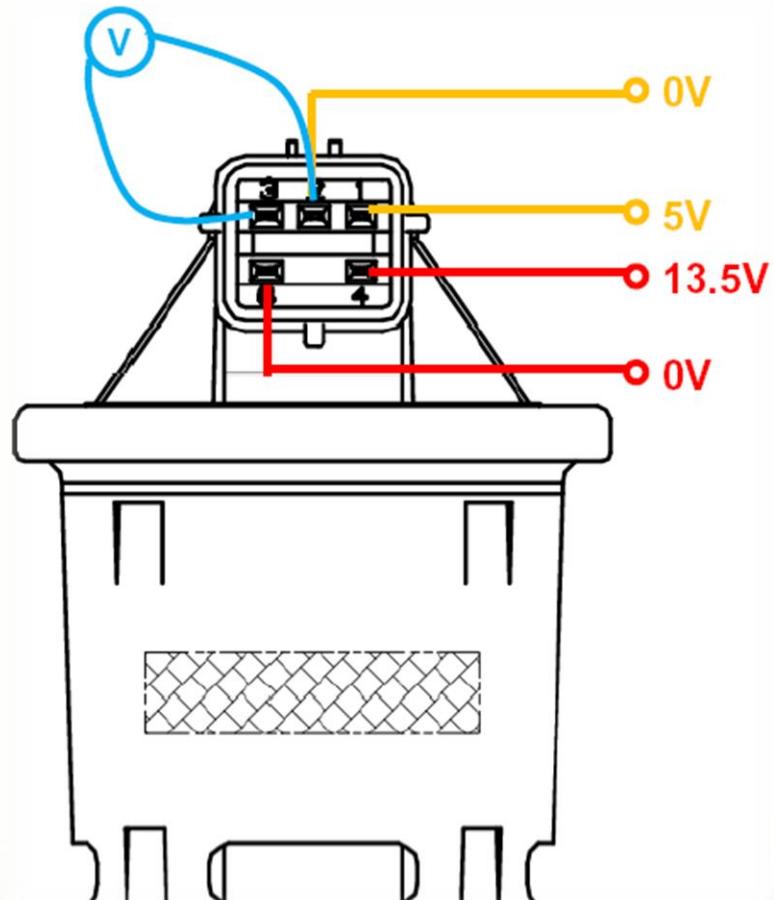


ساختمان شیر برقی EGR



نحوه بررسی عملکرد شیر برقی EGR

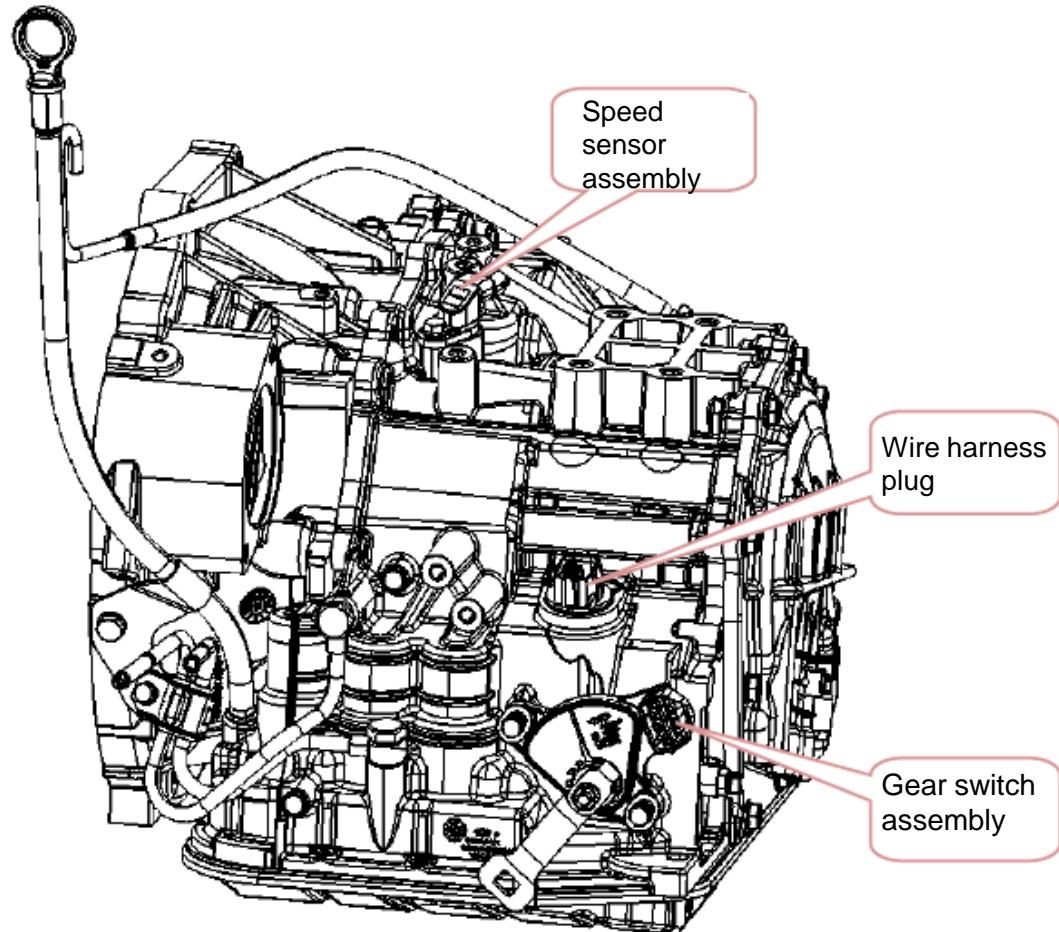
- (1) Measure that the resistance between 1# and 2# is $2340\Omega \sim 3380\Omega$.
- (2) Measure that the resistance between 4# and 6# is $7.5\Omega \sim 8.5\Omega$.
- (3) Connect a 5V power supply between 1# and 2#, and measure that the voltage V_0 between 2# and 3# is $0.8V \pm 0.5V$.
- (4) Maintain the status of step 3, and connect a 13.5V power supply between 4# and 5#; the multimeter reading V_{max} should be $V_0 + 3V \pm 0.35V$.



مشخصات گیربکس اتوماتیک 416AHA

اجزاء اصلی گیربکس اتوماتیک 416AHA

- Hydraulic torque converter
- 2 planetary gear trains
- 3 clutches
- 2 one-way clutches
- 2 brakes
- Hydraulic pump
- Valve body



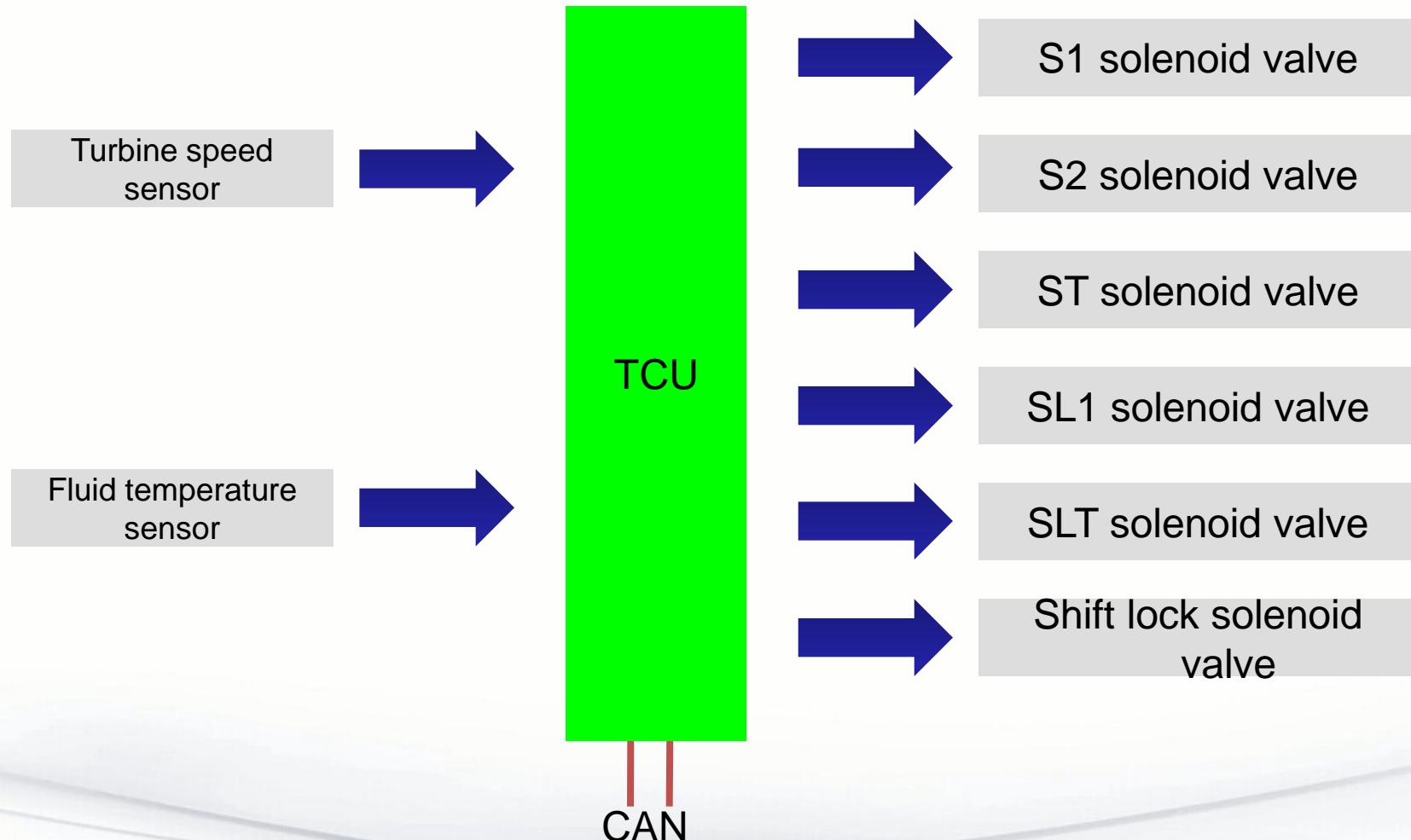
مشخصات گیربکس اتوماتیک 416AHA

Basic parameters

Item	Parameter
Speed ratio in each gear	1ST 2.848
	2ND 1.553
	3RD 1.000
	4TH 0.701
	REV 2.344
First ratio	1.019
Final drive ratio	4.131
Fluid grade (ATF)	C6AT-15
Total transmission capacity (L)	6.35~6.81

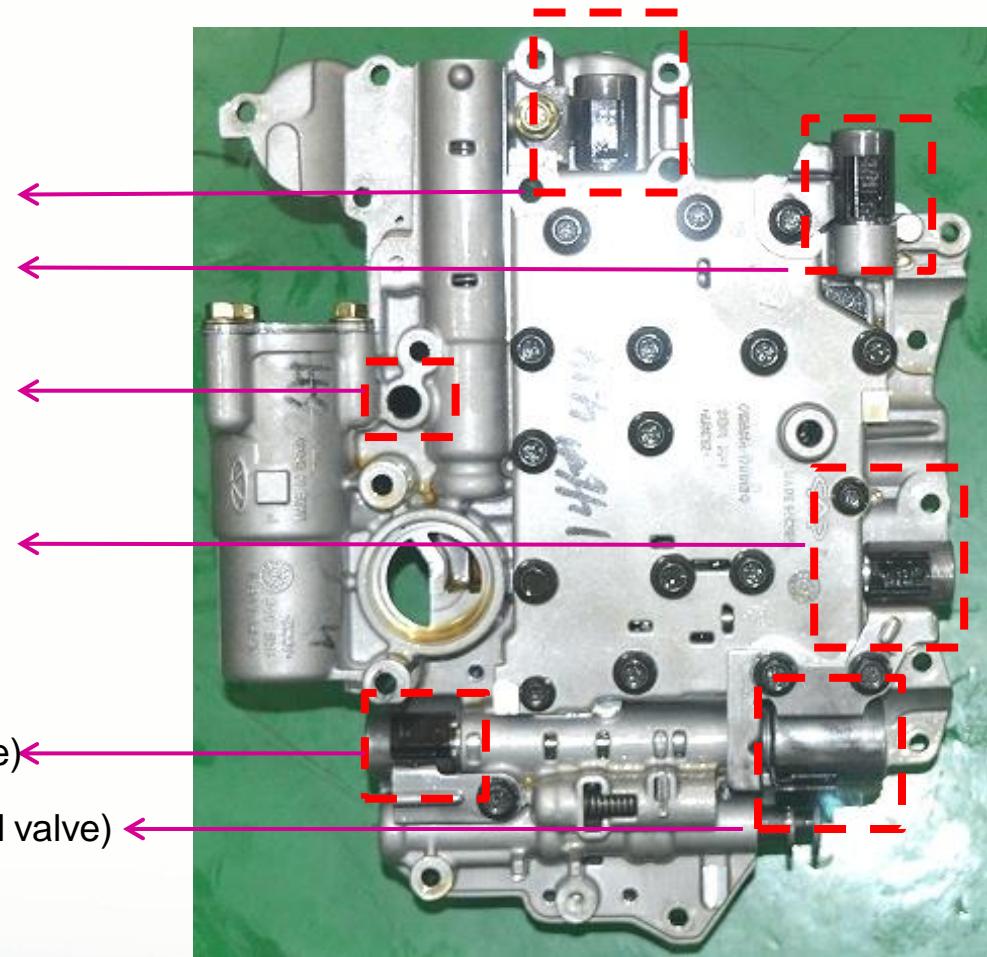
مشخصات گیربکس اتوماتیک 416AHA

بلوک دیاگرام کنترل گیربکس 416AHA



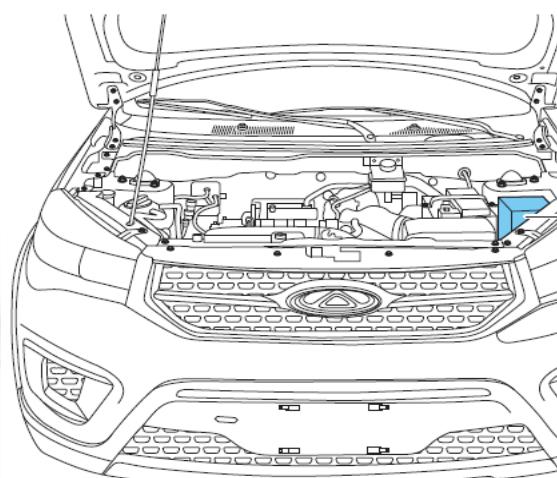
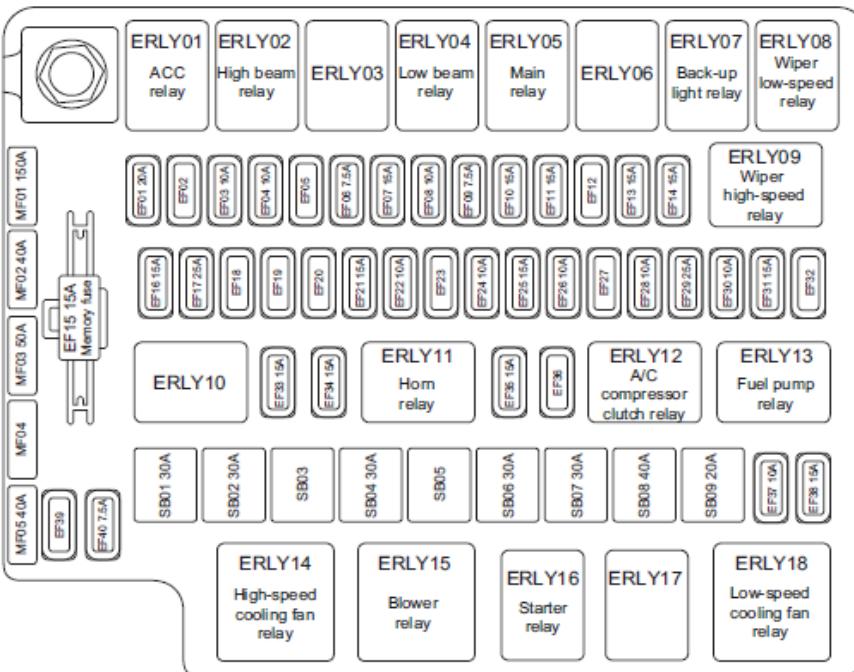
مشخصات گیربکس اتوماتیک 416AHA

Valve body



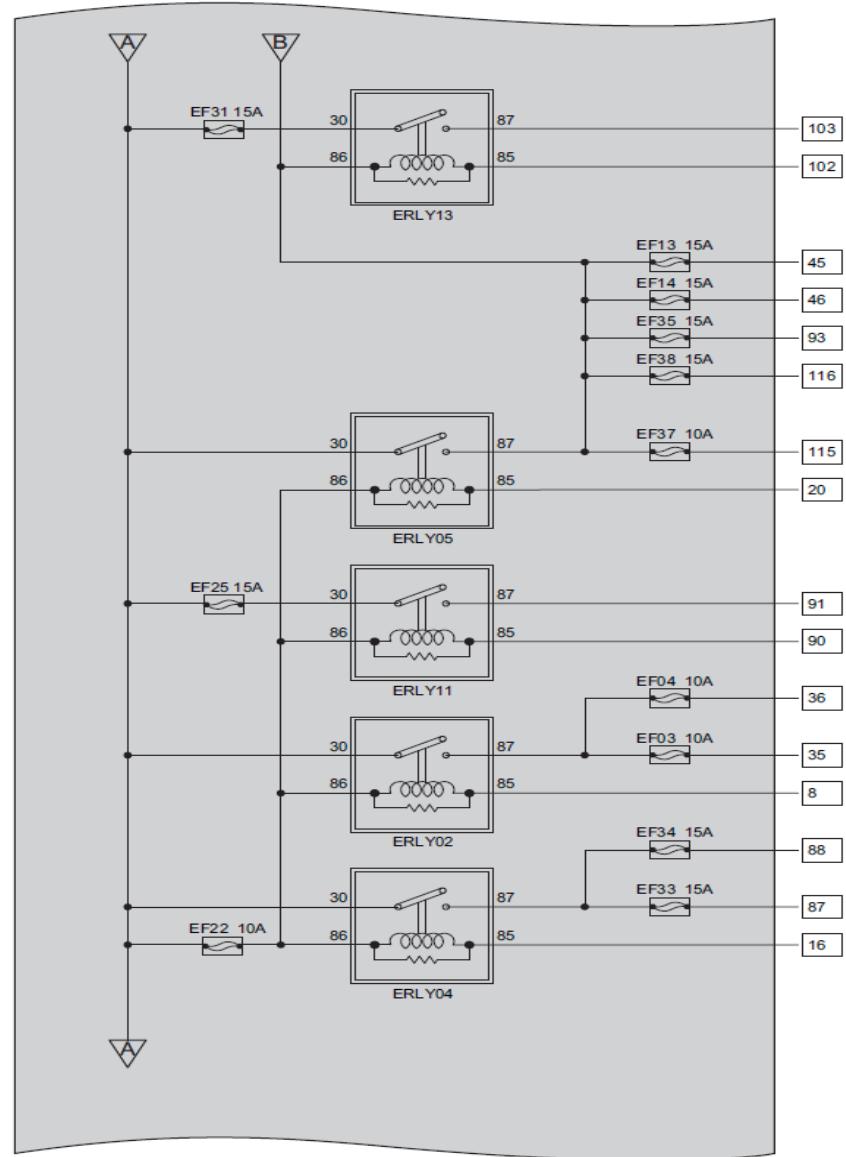
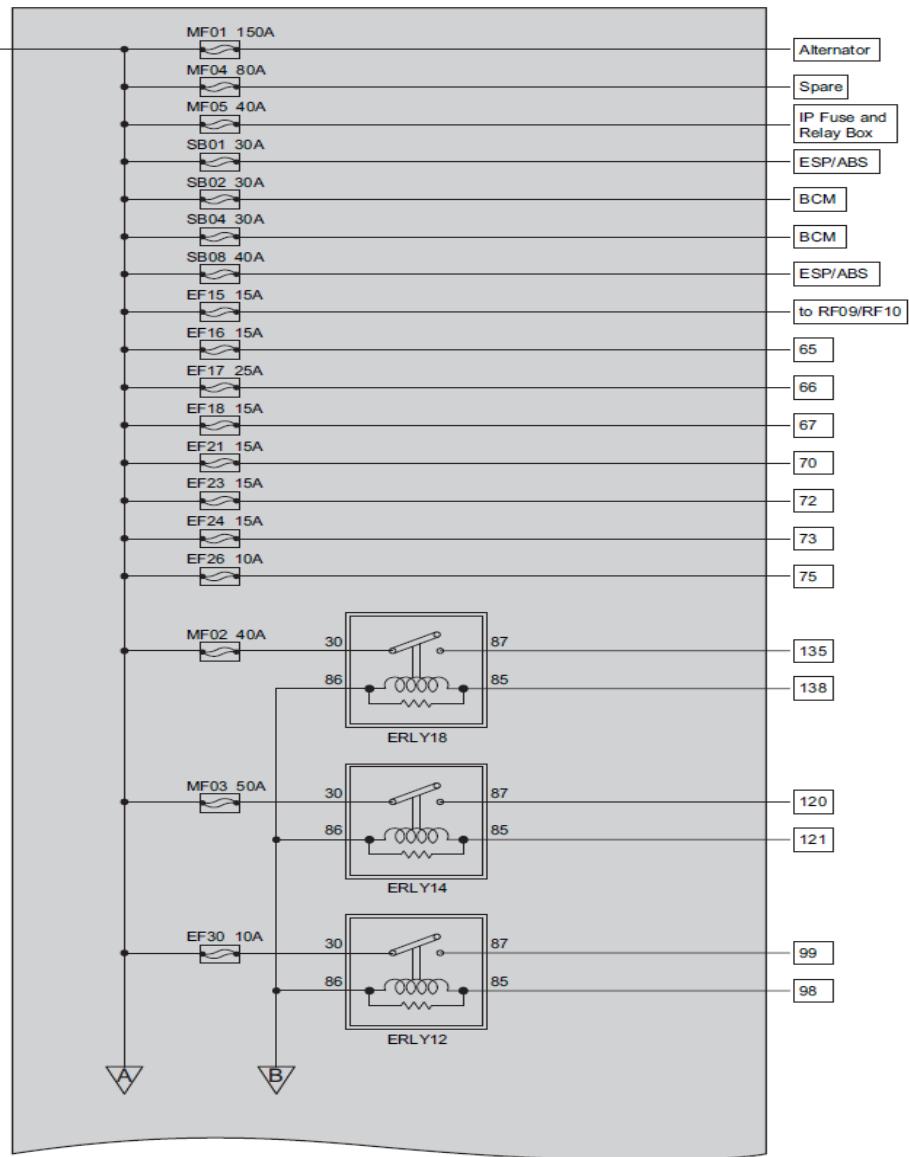
زواياي چرخ خودروی X22

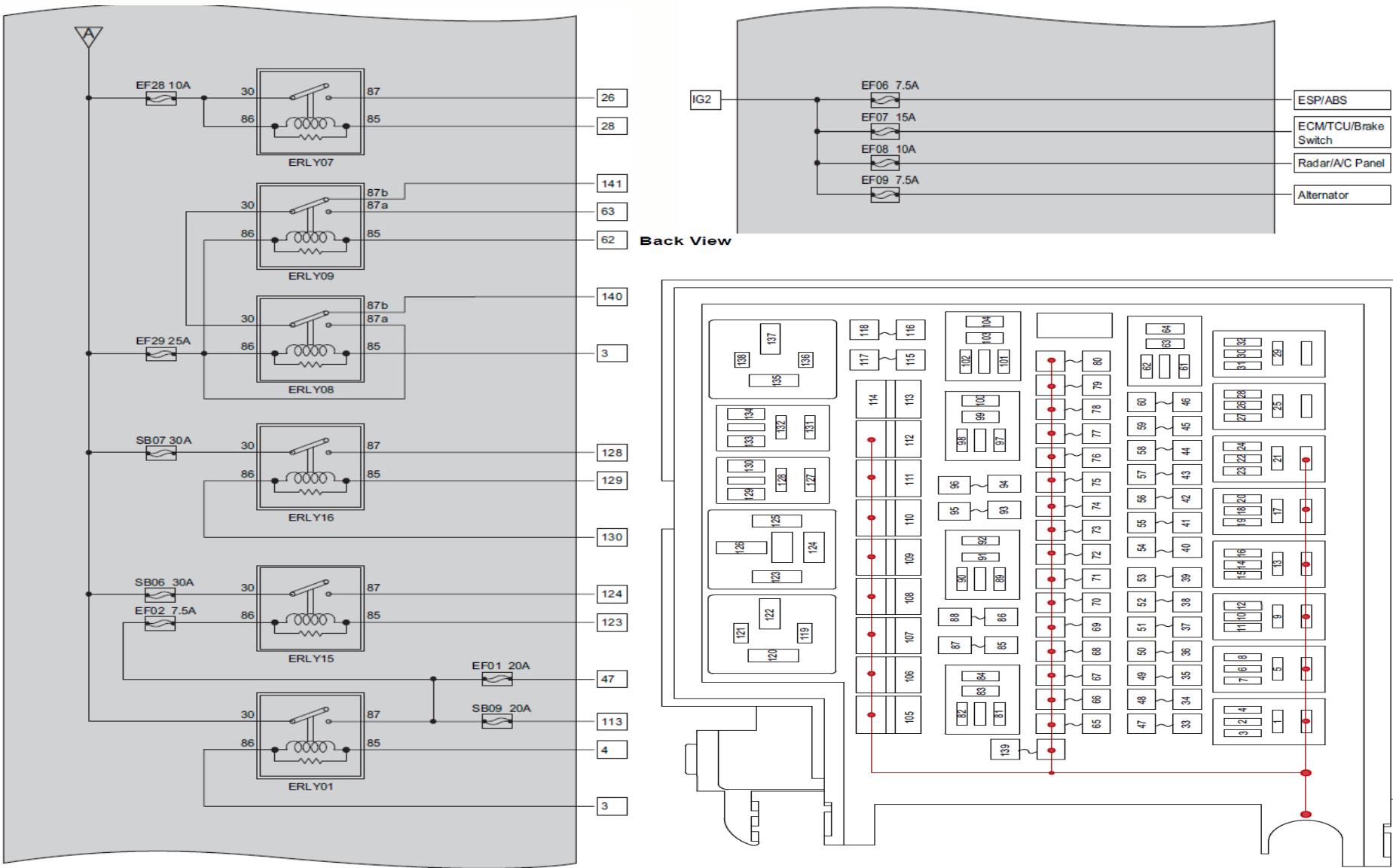
Item		Parameter
Front wheels	Front wheel camber	-0° 36' ± 30'
	Kingpin caster	4° 03' ± 45'
	Kingpin inclination angle	12° 17' ± 45'
	Front wheel toe-in	0' ± 5' (single side)
Rear wheels	Rear wheel camber	-1° 30' ± 30'
	Rear wheel toe-in	0° 10' ± 20' (single side)
Sideslip		≤ 3 m/km

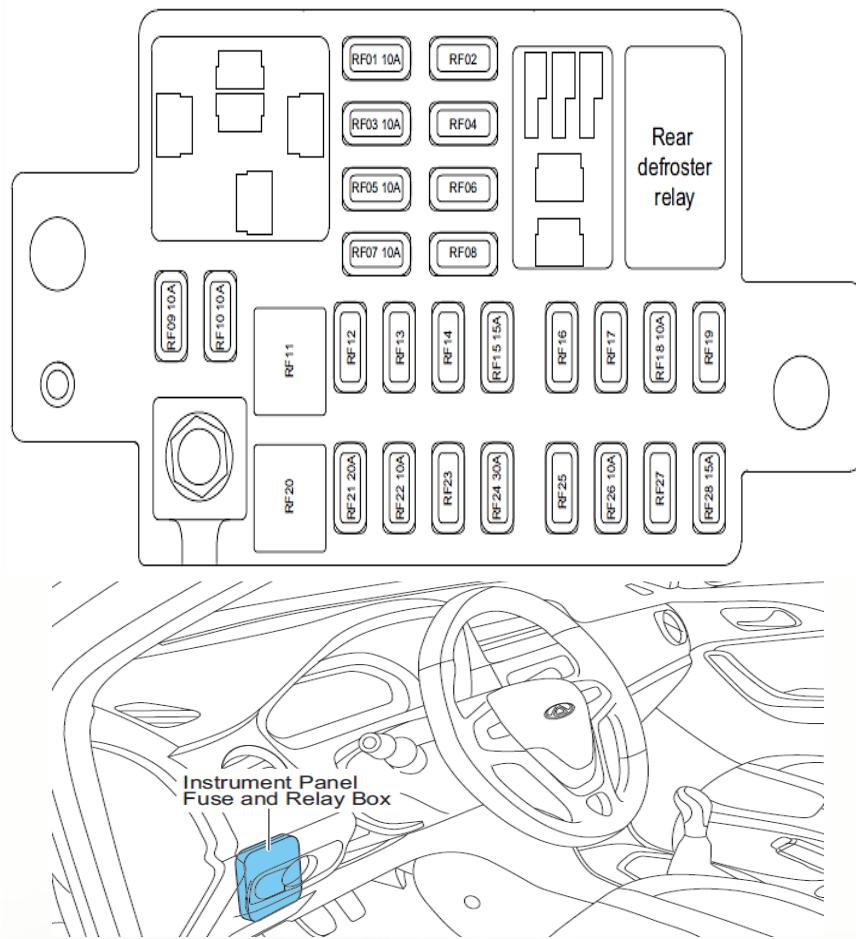


Engine Compartment
Fuse and Relay Box

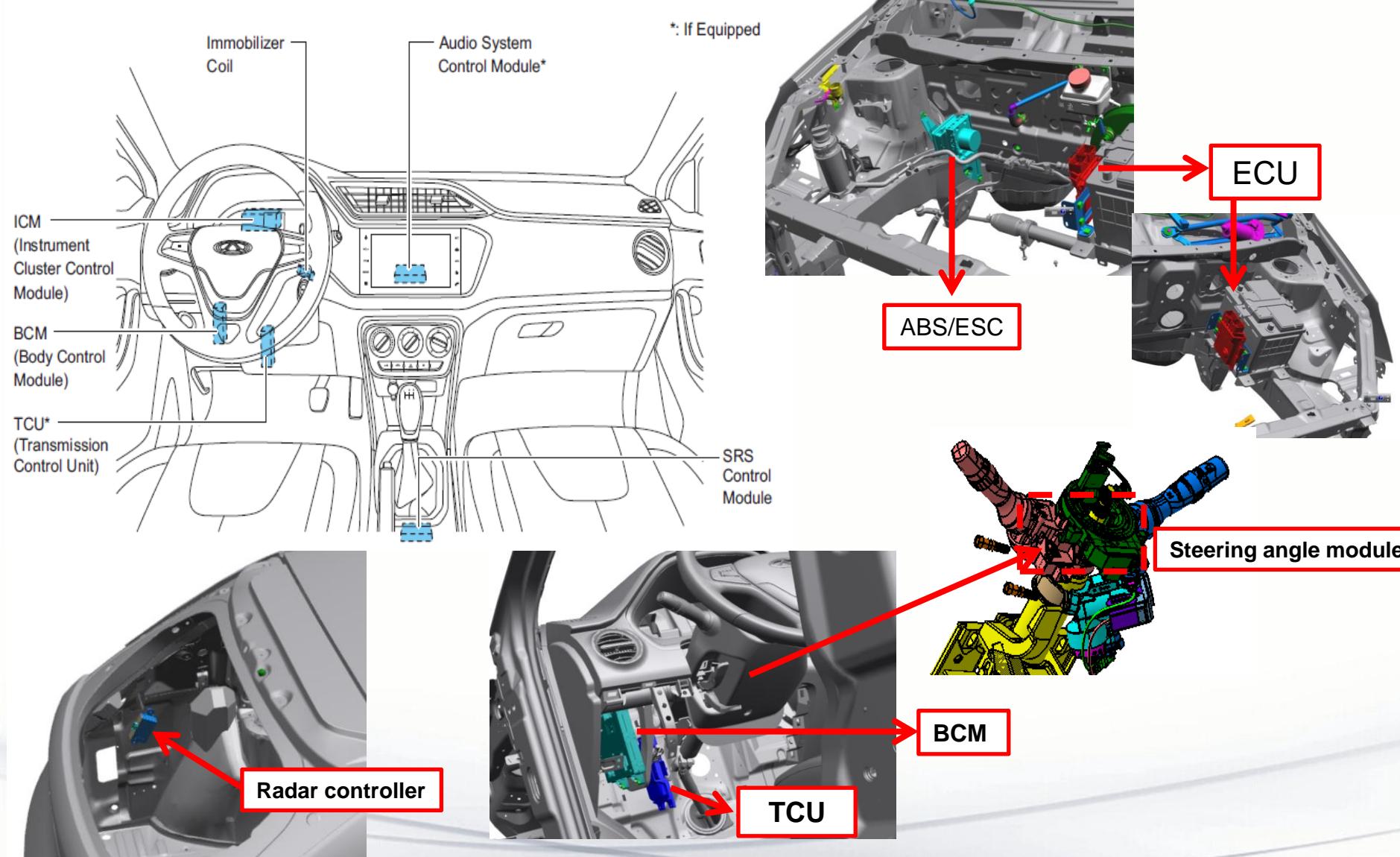
No.	Description	No.	Description	No.	Description
EF01	Spare	EF19	-	EF37	ECM
EF02	-	EF20	-	EF38	Fuel Injector
EF03	Left High Beam	EF21	BCM	EF39	-
EF04	Right High Beam	EF22	Coil Power Supply	EF40	Blower Relay
EF05	-	EF23	-	SB01	ESP/ABS
EF06	ESP/ABS	EF24	Brake Switch	SB02	BCM
EF07	ECM/TCU (AT Model)/Brake Switch	EF25	Horn	SB03	-
EF08	A/C Switch/Reversing Radar	EF26	ECM/TCU (AT Model)	SB04	BCM
EF09	Alternator Excitation	EF27	-	SB05	-
EF10	BCM	EF28	Back-up Light	SB06	Blower
EF11	BCM	EF29	Wiper	SB07	Starter
EF12	-	EF30	A/C Compressor	SB08	ESP/ABS
EF13	Oxygen Sensor	EF31	Fuel Pump	SB09	ACC
EF14	Ignition Coil	EF32	-	MF01	Alternator
EF15	Shipping Fuse	EF33	Left Low Beam	MF02	Low-speed Fan
EF16	BCM	EF34	Right Low Beam	MF03	High-speed Fan
EF17	Sunroof	EF35	Control Valve	MF04	-
EF18	-	EF36	-	MF05	Instrument Panel Relay and Fuse Box (B+)

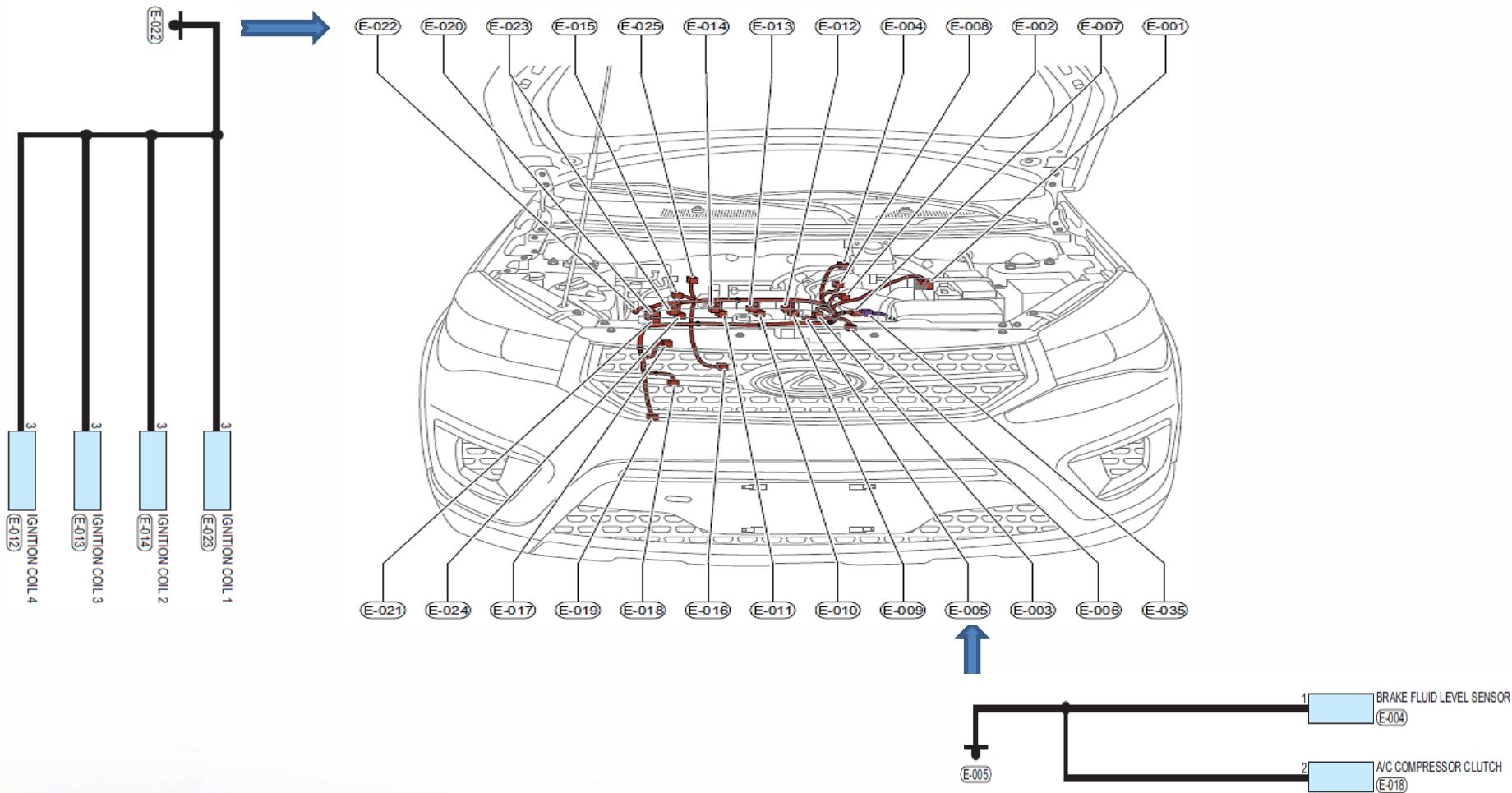




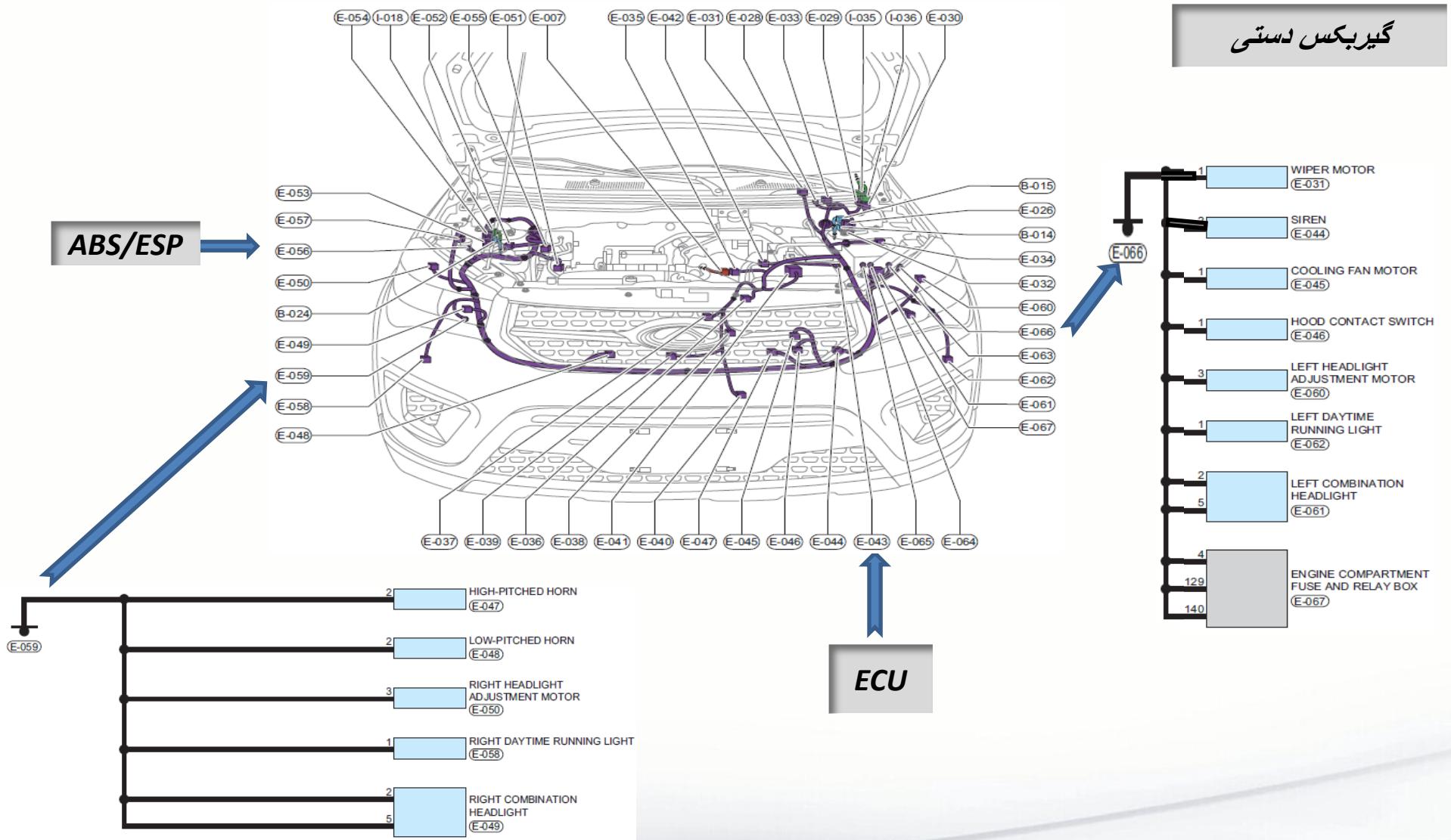


No.	Description	No.	Description	No.	Description
RF01	BCM/Instrument Cluster/Engine Immobilizer	RF11	-	RF21	AM2
RF02	-	RF12	-	RF22	AM1
RF03	SAS	RF13	-	RF23	-
RF04	-	RF14	-	RF24	Rear Window Defroster Relay
RF05	Airbag	RF15	Diagnosis/Key Switch/Rear Window Defroster Relay	RF25	-
RF06	-	RF16	-	RF26	Audio/Rear View Mirror Adjustment/BCM/Sunroof
RF07	Audio/A/C Panel/Headlight Leveling Motor	RF17	-	RF27	-
RF08	-	RF18	Rear View Mirror Heater/Rear Window Defroster Switch Indicator	RF28	Backup Power Supply
RF09	Audio/A/C Panel	RF19	-		
RF10	Instrument Cluster	RF20	-		

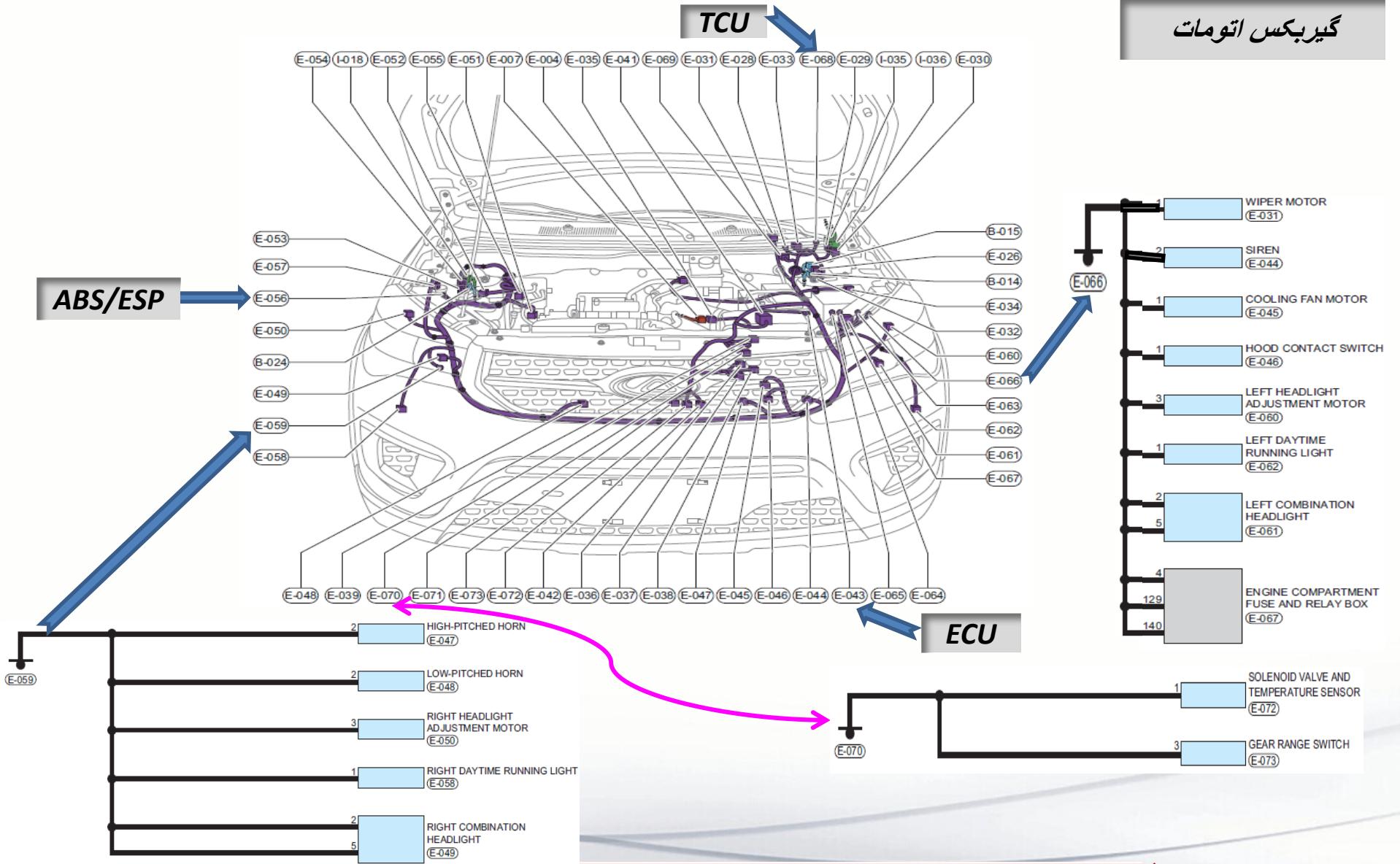


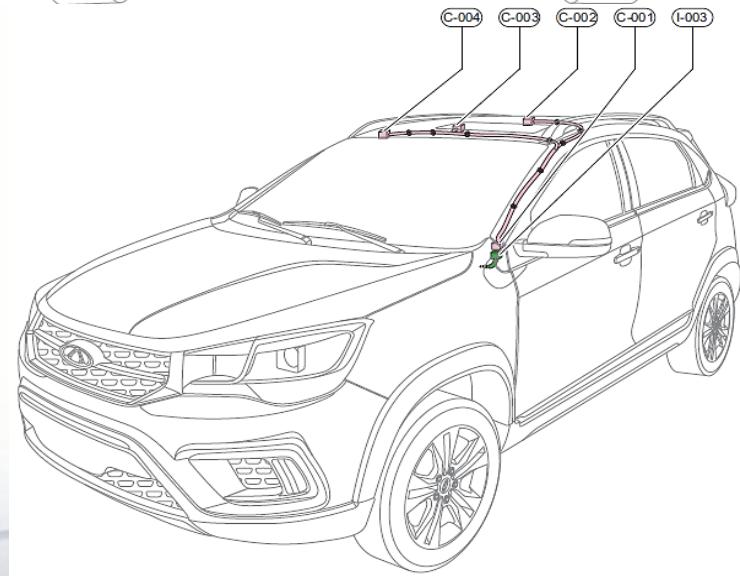
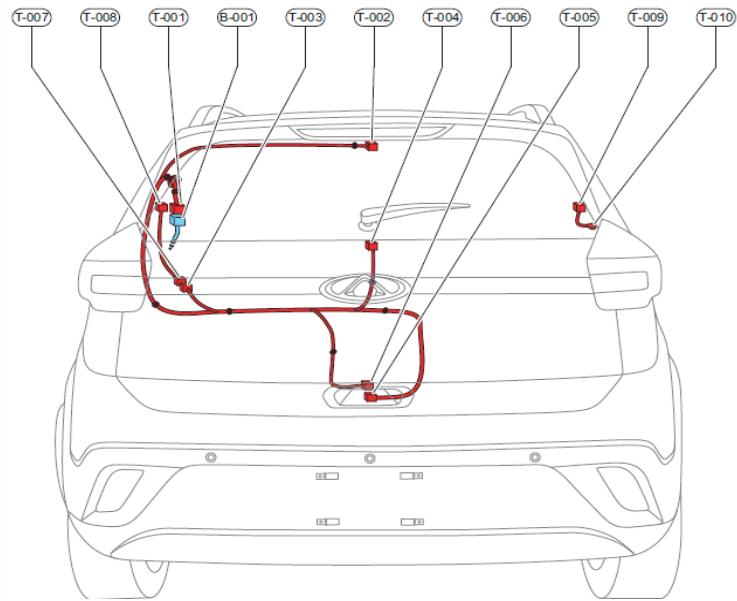
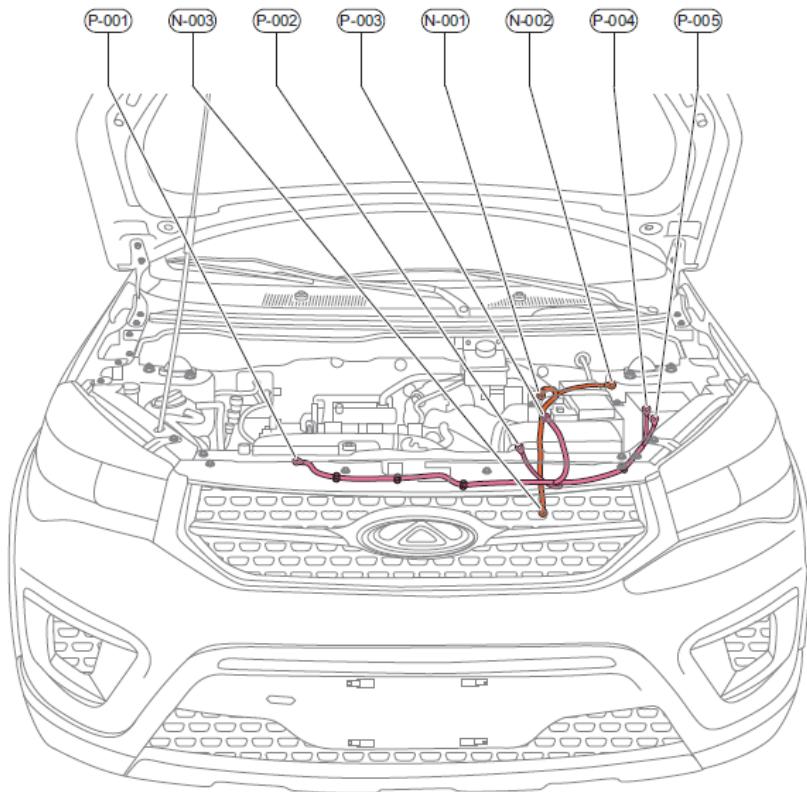


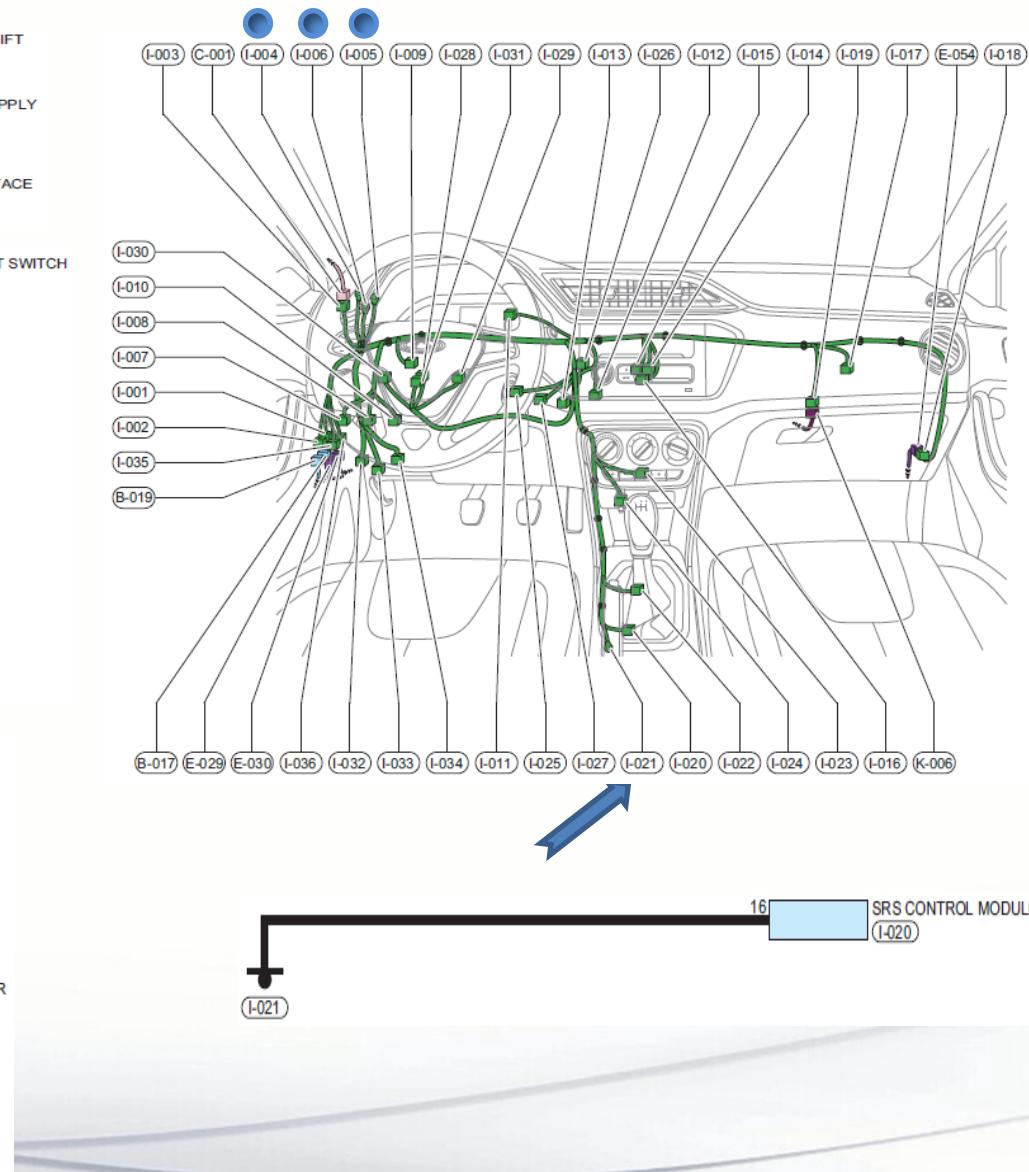
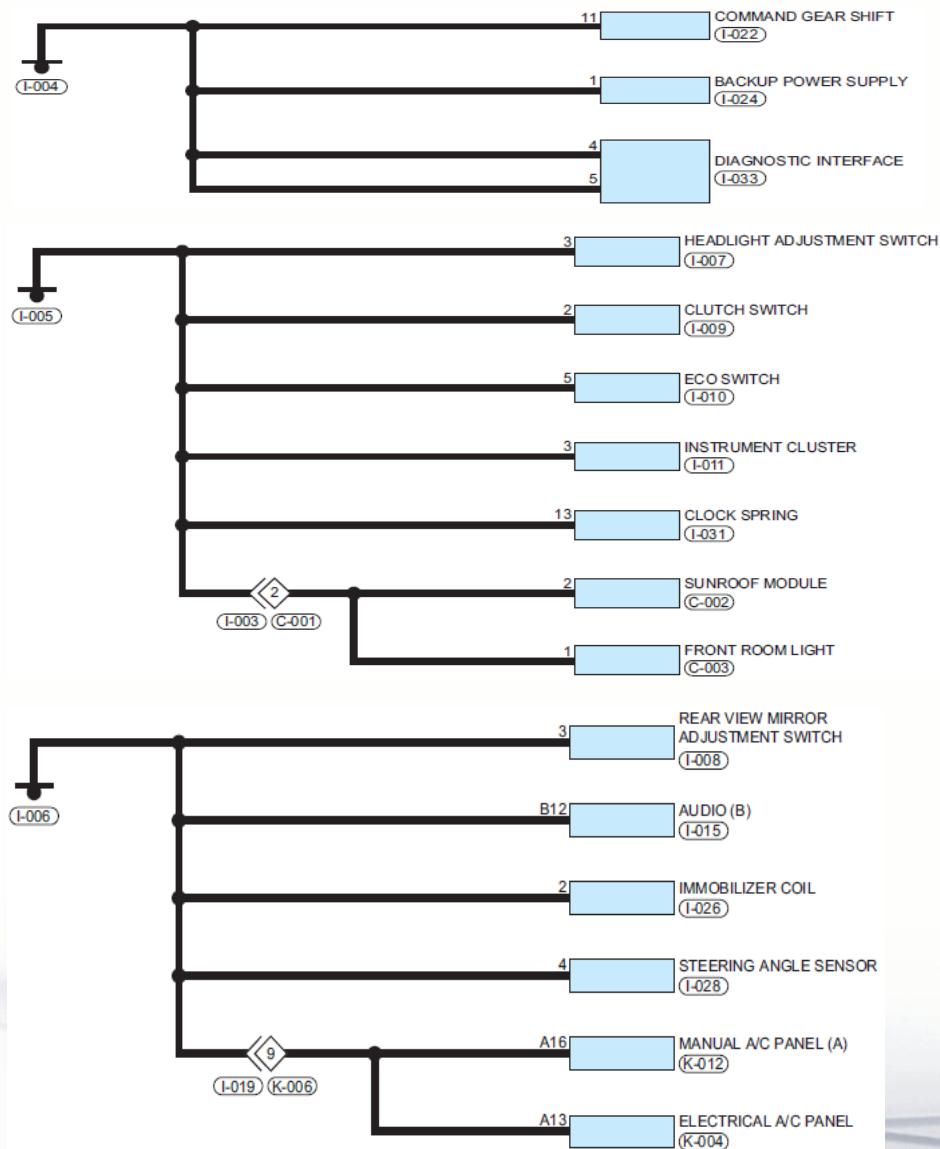
گیربکس دستی

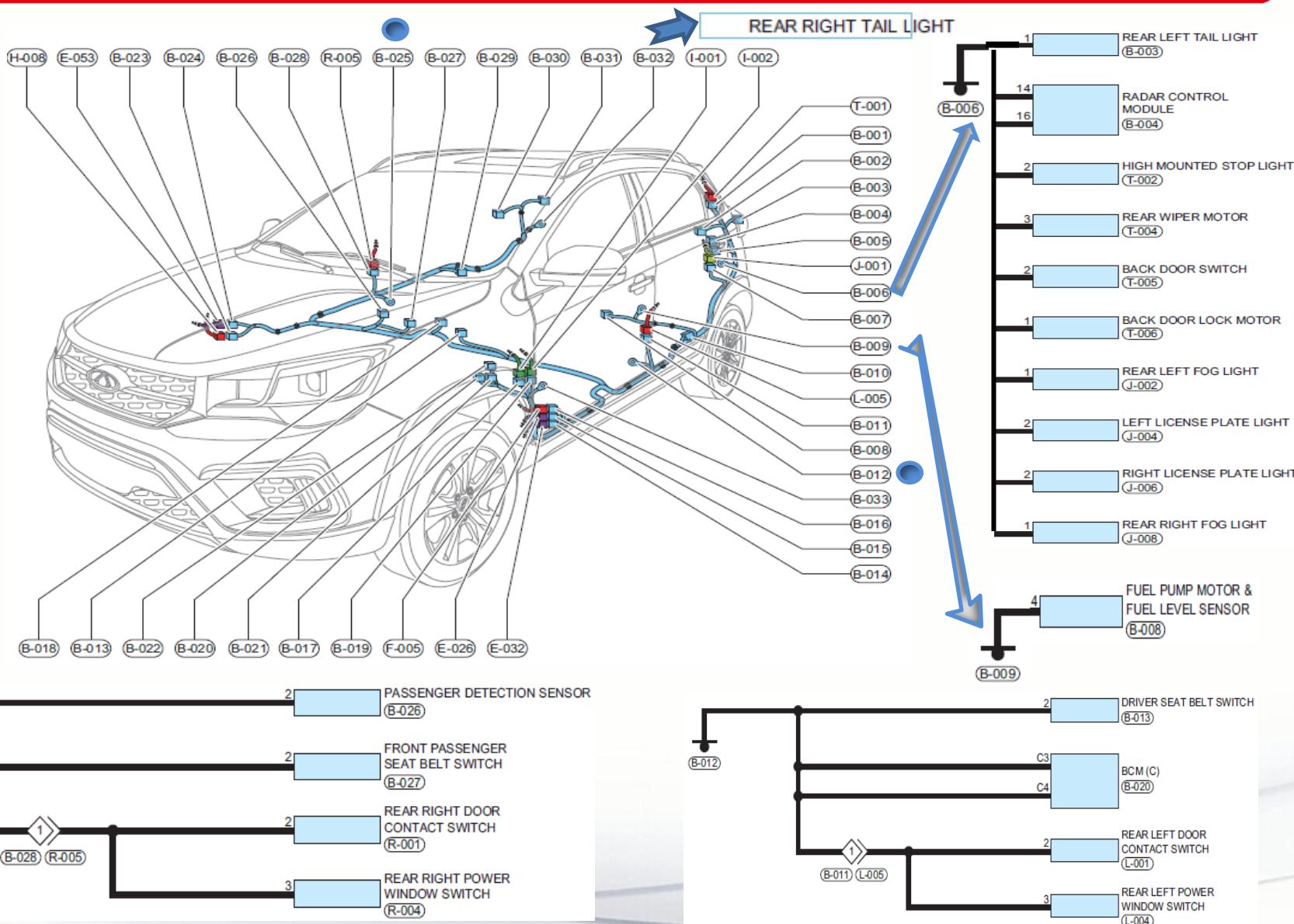


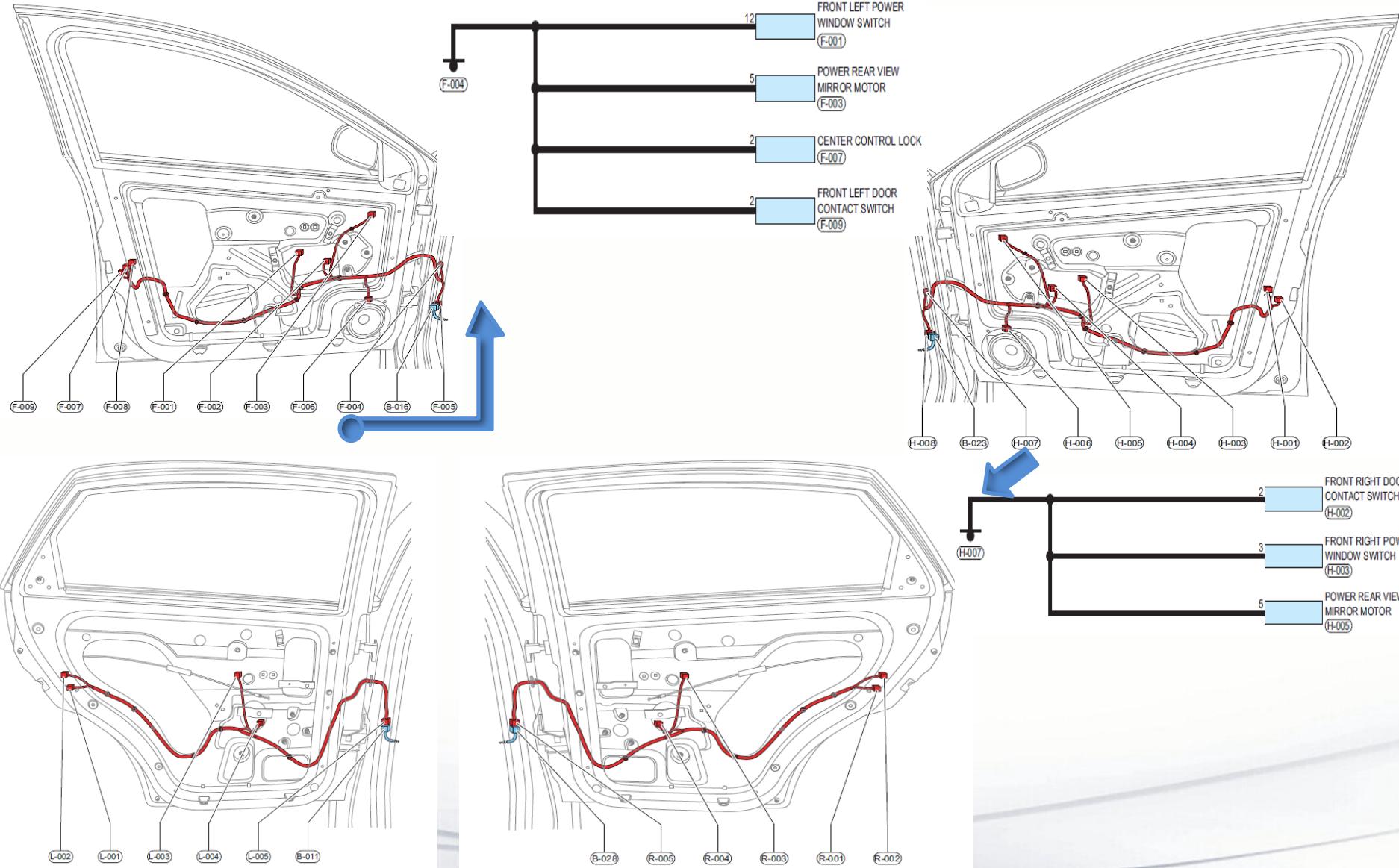
گیربکس اتومات

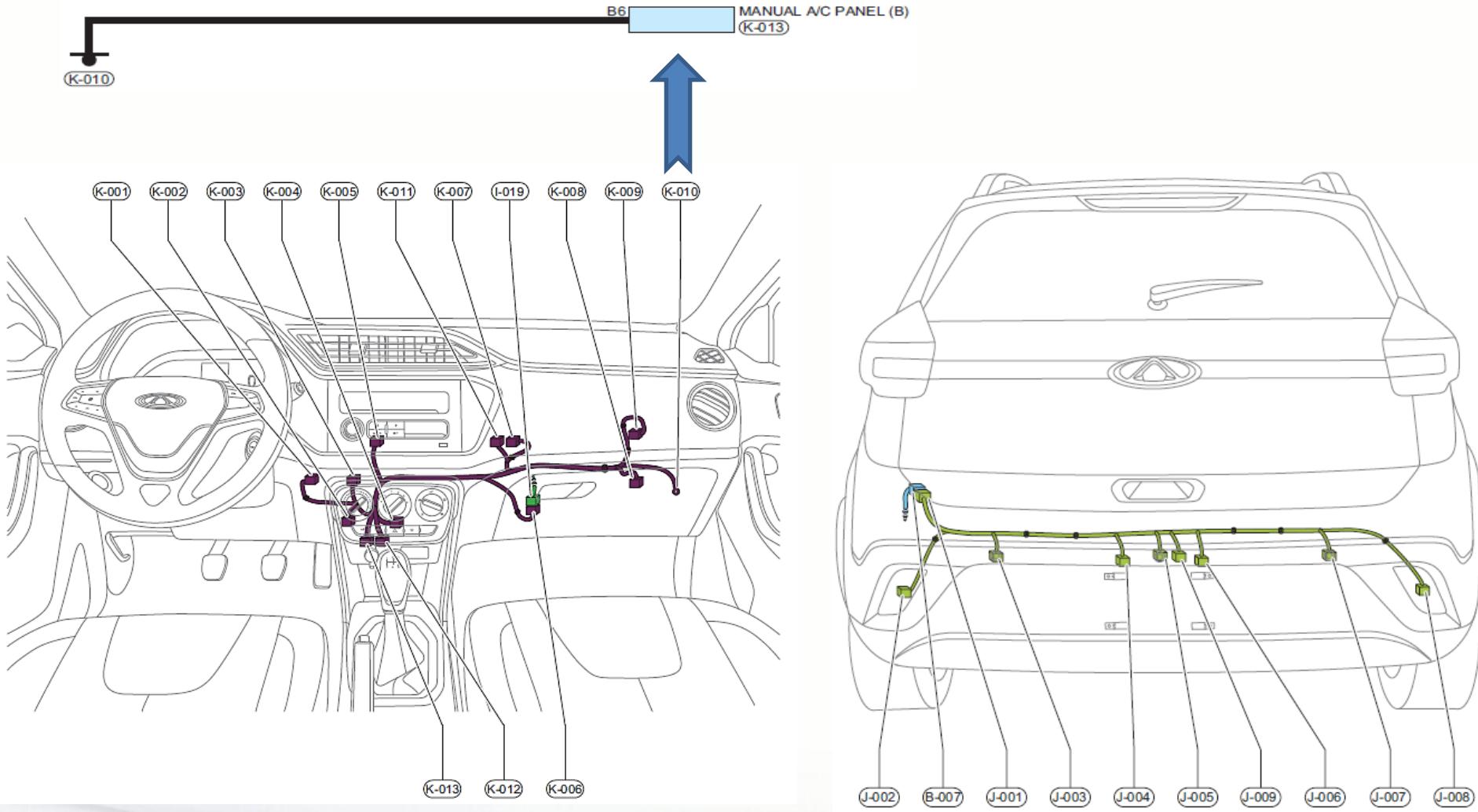




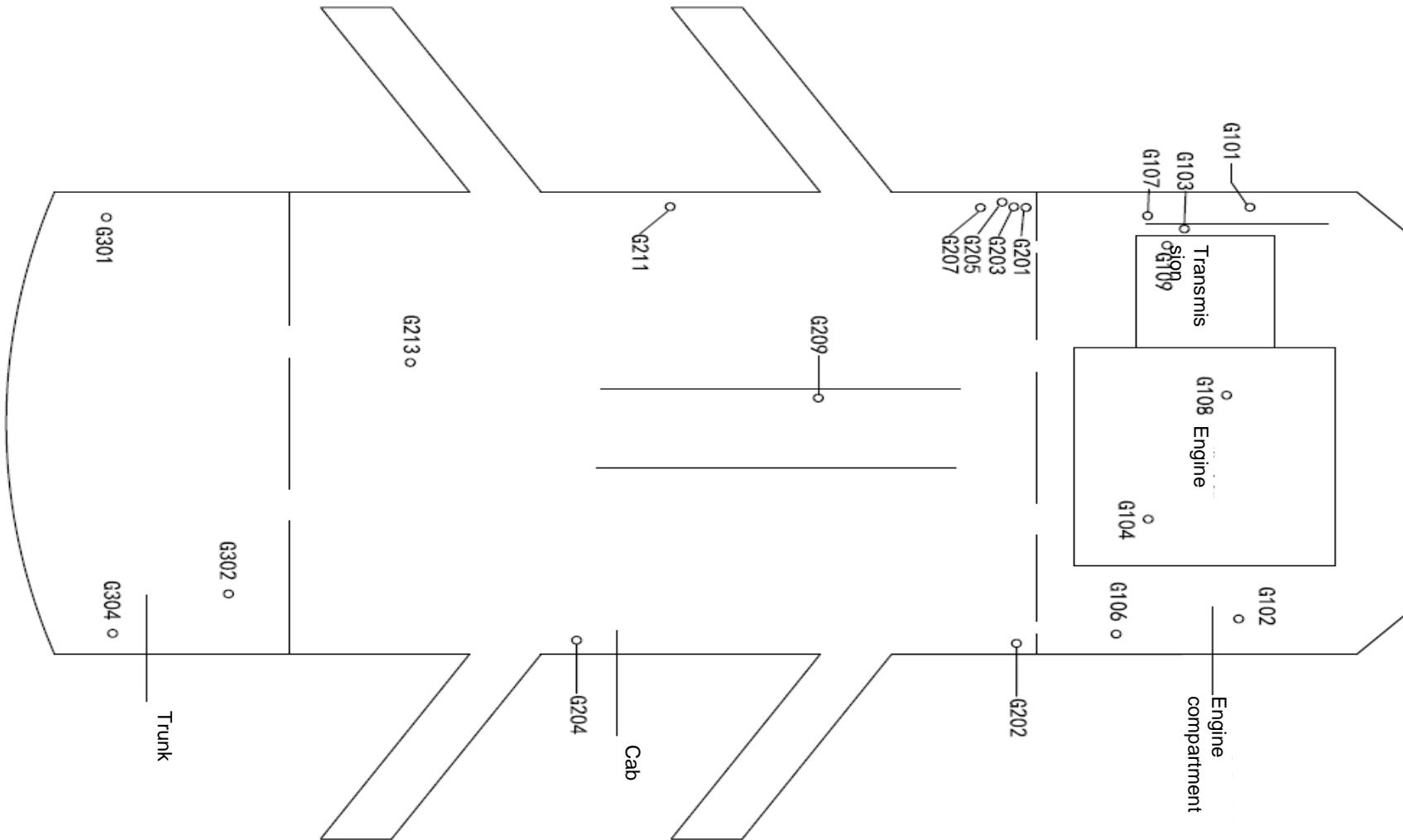








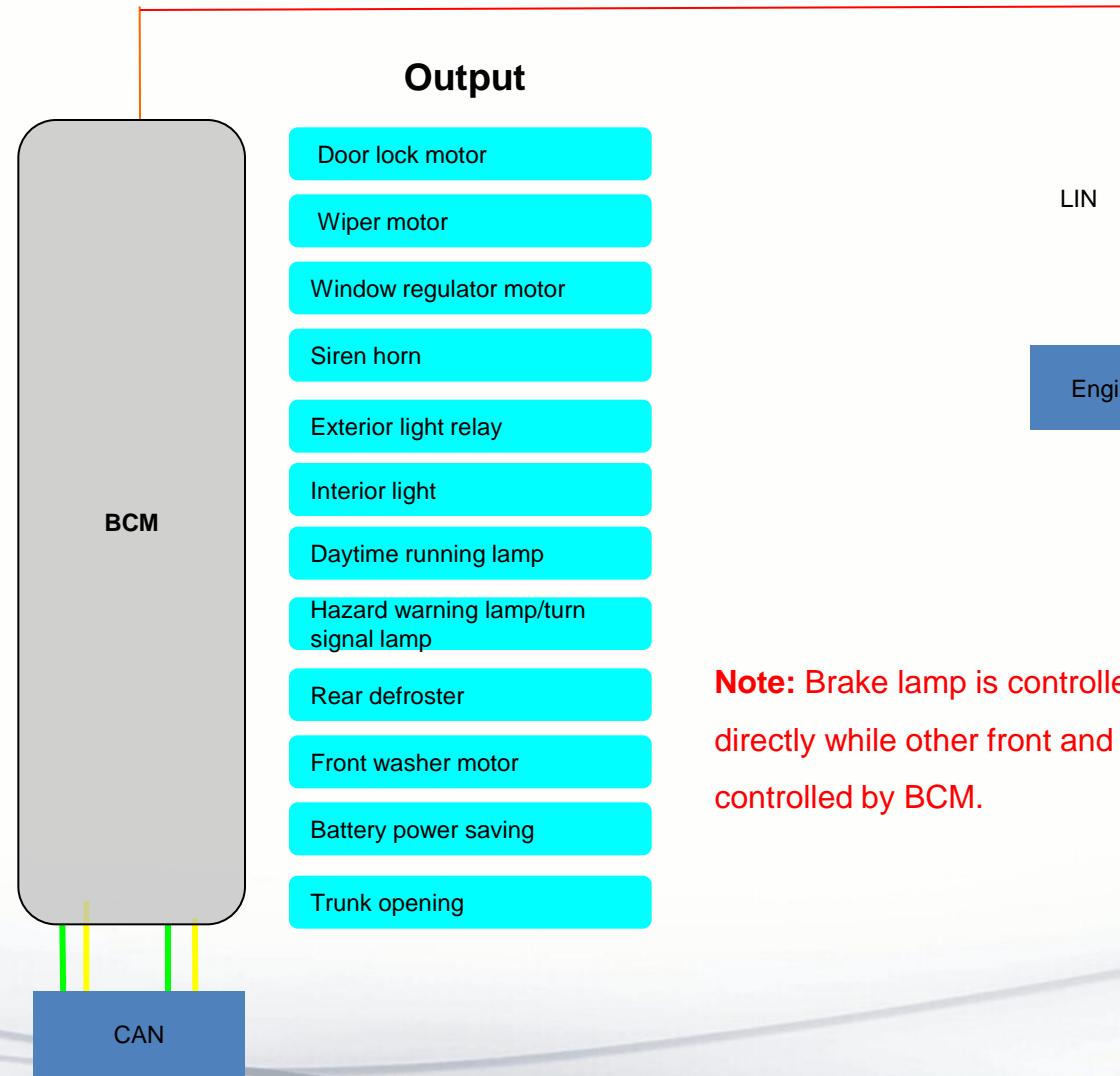
Position diagram of ground points



BCM بلوک دیاگرام

Input

- Trunk switch signal
- Door lock status signal
- Wiper switch signal
- Central locking switch signal
- Window switch signal
- Light switch signal
- Key insertion signal
- Ignition switch signal
- Rear defroster switch signal
- Hazard warning lamp switch signal
- Reversing lamp switch signal
- Remote control button signal
- Tire pressure monitoring signal



لیست پایه های ورودی و خروجی BCM

Functions: It controls lamps, doors, windows, locks, IMMO system, wipers, TPMS, etc. and acts as a CAN-LIN gateway.

BCM (Body Control Module) Terminal Definition

BCM (A) Terminal Definition



Terminal No.	Description	Terminal No.	Description
A1	-	A27	Dome Light Out
A2	-	A28	Trunk Lamp Out
A3	-	A29	Defroster Relay Out
A4	-	A30	Wiper High-speed Relay Out
A5	-	A31	Reversing Light Relay Out
A6	-	A32	-
A7	-	A33	FR Win SW In
A8	-	A34	FL Win SW In
A9	-	A35	Trunk Unlock SW In
A10	RL Door Ajar In	A36	Win Inhibit In
A11	-	A37	FR Door Ajar In
A12	RR Door Ajar In	A38	Reverse Signal In
A13	-	A39	-
A14	-	A40	Win Inhibit Indicator Out
A15	-	A41	-
A16	-	A42	Wiper Low-speed Relay Out
A17	-	A43	Low Beam Relay Out
A18	High Beam Relay Out	A44	Horn Relay Out
A19	RR Win SW In	A45	SW GND
A20	Passenger FR Win SW In	A46	Turn Light SW In
A21	Passenger RL Win SW In	A47	RL Win SW In
A22	Passenger RR Win SW In	A48	Trunk Ajar In
A23	FL Door Ajar In	A49	Center Lock In
A24	Front Wiper Park In	A50	Center Unlock In
A25	-	A51	-
A26	Rear Wiper Park In	A52	Hood Ajar In

Note: No fuse is equipped on A13T BCM.

لیست پایه های ورودی و خروجی BCM

BCM (B) Terminal Definition

Terminal No.	Description	Terminal No.	Description
B1	-	B13	-
B2	CAN2_L	B14	Hazard SW Indicator Out
B3	CAN1-L	B15	CAN2_H
B4	LIN (to Immobilizer Coil)	B16	CAN1-H
B5	IG_ACC In	B17	IG_ON In
B6	-	B18	Key In
B7	Rear Fog Light SW In	B19	Rear Wash SW 1 In
B8	Front Wiper SW 2 In	B20	Front Wash SW In
B9	Rear Defroster SW In	B21	Rear Wiper SW 2 In
B10	-	B22	Front Wiper SW 1 In
B11	Hazard Switch In	B23	Position/Headlight SW In
B12	High Beam/Flash In	B24	Wiper Sensitivity SW

BCM (E) Terminal Definition

Terminal No.	Description	Terminal No.	Description
E1	-	E11	-
E2	-	E12	-
E3	-	E13	-
E4	Left Turn Light Out	E14	Left Daytime Running Light Out
E5	Right Turn Light Out	E15	Left Daytime Running Light Out
E6	Siren Out	E16	Battery Saver Out
E7	Rear Position Lights Out	E17	Rear Fog Light Out
E8	-	E18	-
E9	Front Position Lights Out	E19	-
E10	-	E20	Power-4

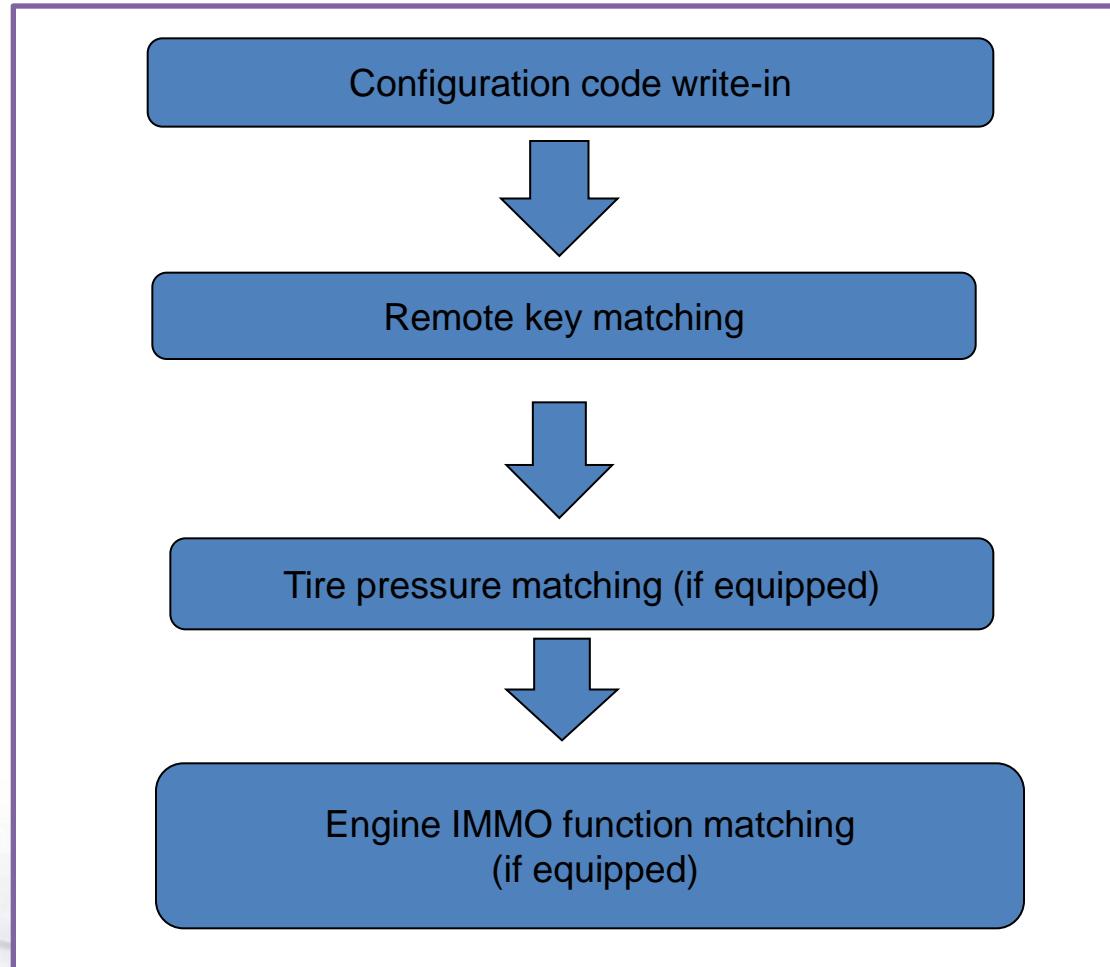
BCM (C) Terminal Definition

Terminal No.	Description	Terminal No.	Description
C1	Power-3	C8	Win RL Up Out
C2	Power-6	C9	Win RL Down Out
C3	GND-1	C10	Power-1
C4	GND-2	C11	Win FR Up Out
C5	Win RR Down Out	C12	Win FR Down Out
C6	Win RR Up Out	C13	Win FL Up Out
C7	Power-2	C14	Win FL Down Out

BCM (D) Terminal Definition

Terminal No.	Description	Terminal No.	Description
D1	-	D7	-
D2	Door Lock Motor Unlock Out	D8	-
D3	Door Lock Motor Lock Out	D9	Power-5
D4	Trunk Unlock Out	D10	Rear Wiper SW Out
D5	Front Washer SW Out	D11	-
D6	-	D12	Rear Washer SW Out

اقدامات پس از تعویض BCM



Configuration code

- Configuration code can be written in automatically.
- Automatic write-in is to read the complete vehicle configuration code in ICM.
- If automatic write-in is failed, manual write-in may be used.
- Complete vehicle configuration code is a 16-digit code.

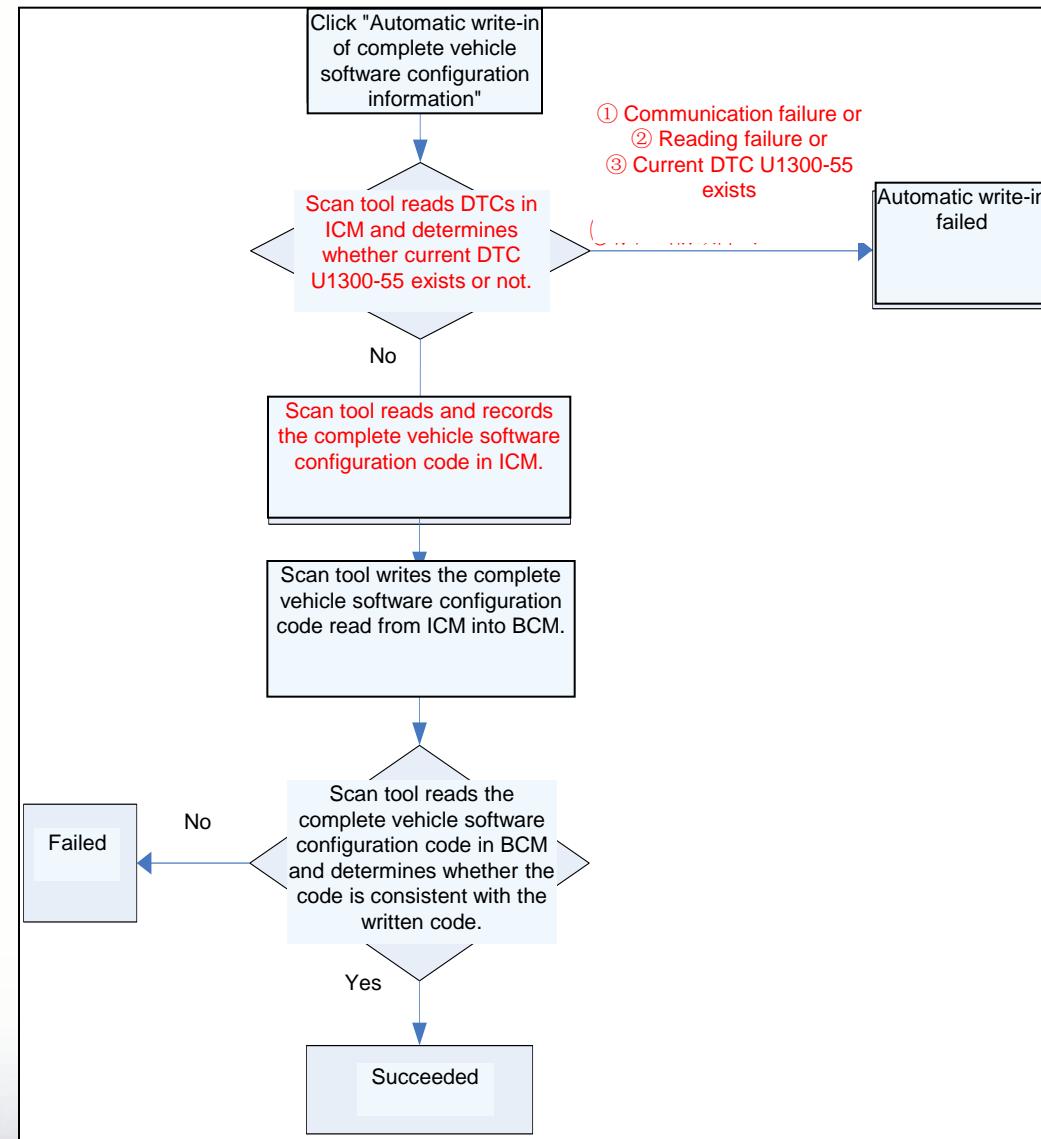


Special operation

Remote key learning (only for non-PEPS models)

Automatic write-in of complete vehicle software configuration information

Automatic write-in of complete vehicle software configuration information



سیستم صوتی و تصویری

Diskless DVD entertainment system

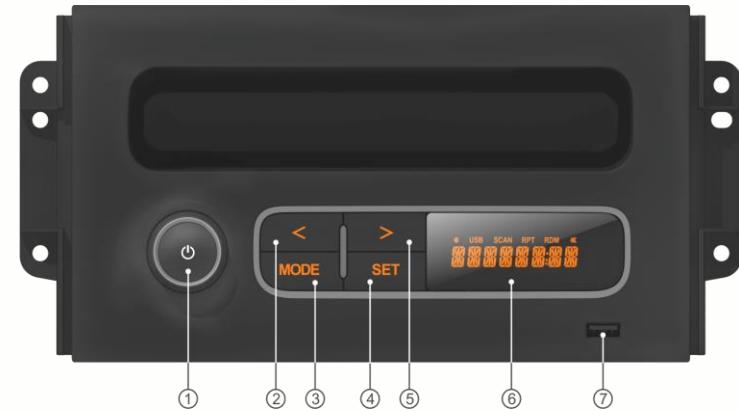
- Radio.
- Navigation.
- Music.
- Movie.
- Picture viewing.
- Reverse camera.
- Answer/connect a call with Bluetooth phone.
- Mobile phone mapping.



1	2	3	4	5	6	7	8	9	10
Power key	Volume+ key	Volume - key	FM/AM key	Mute key	Menu setting key	Mobile phone interconnection key	USB key	Bluetooth music key	Bluetooth phone key

Diskless CD system

- The radio therein has two bands (FM and AM).
- The system supports the playback of USB file.
- The system has the power amplifier overheating protection function. When temperature reaches 160 - 170°C, the system will decrease the power automatically and even be muted.



1	2	3	4	5	6	7
Power button, volume control knob	Previous track/Step back/Rew key	Audio source key	System setting key	Next track/Step forward/Fwd key	LCD	USB connector

تنظیمات سیستم صوتی و تصویری

قابلیت قفل/باز شدن اتوماتیک درب ها

Conditions for auto locking:

1. Vehicle speed is greater than 20 km/h;
2. Automatic locking function is enabled;

Conditions for automatic unlocking:

1. Complete vehicle is locked;
2. Vehicle speed is 0;
3. The key is turned to OFF.



Remark: Automatic locking function can be enabled or disabled on DVD.

تنظیمات سیستم صوتی و تصویری

تنظیمات مرتبط با اطمینان از عملکرد قفل مرکزی

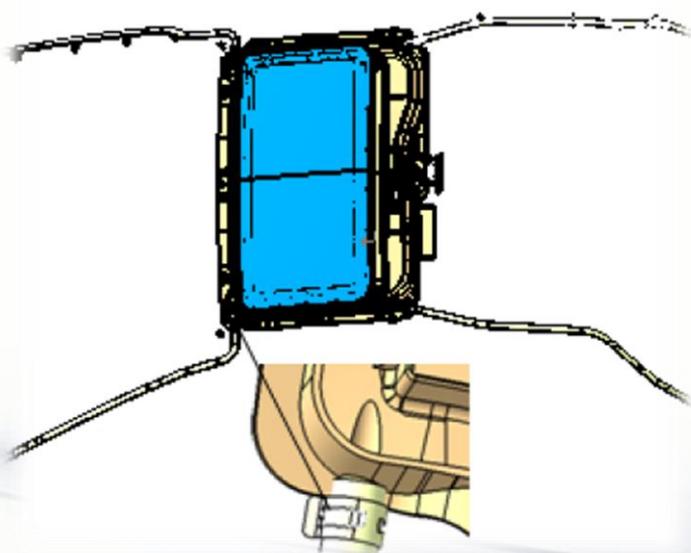
The following functions can be set on DVD interface:

- Performance of successfully-armed complete vehicle (only horn reminder, only light reminder, or horn + light reminders, or no reminder): horn + light reminders are set by default.
- Daytime running lamp: it is equipped by default.
- Automatic locking function: it is designed by default.



Overview:

- Outer sliding sunroof is applied.
- The sunroof has two modes, i.e., lifted mode and opened mode.
- Self-winding sunshade is applied.
- Four drain pipes are applied.



کالیبره کردن سانروف

Perform repair according to following procedures with sliding roof mechanical fault repaired, and make sure that power supply shall not be shut off and battery voltage is higher than 10 V during operation. Make sure that there is no hard matter (all obstacles) which blocks operation of sliding mechanism before repairing. Make sure that problem symptom occurred in sliding roof is in four point listed above.

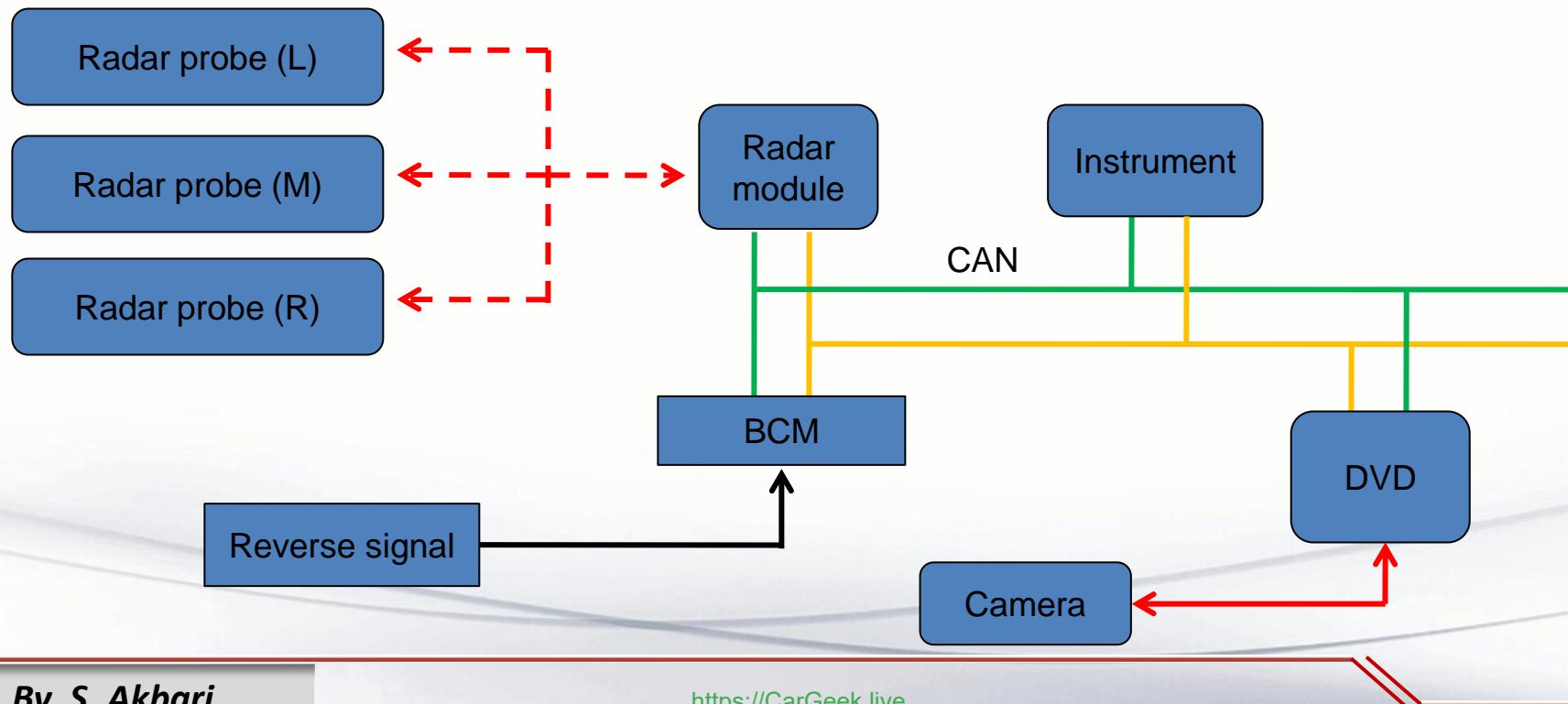
1. Module initial memory position recovering method (pay attention that pressing way and pressed button)
 - 1st step: Open sliding roof visor to the maximum position.
 - 2nd step: Press and hold sliding roof ON/OFF button (be sure button is correct) for 10 seconds with sliding roof fully closed, and sliding roof initialization is complete when a "click" sound is heard from sliding roof motor.
 - 3rd step: Adjust sliding roof after completing above procedures, and replace module or motor if symptom still cannot be solved.

Note: After replacing sliding roof motor, sliding roof module, sliding roof assembly or if entire vehicle power is cut off, perform sliding roof initialization procedures.

سیستم هشدار دنده عقب

اجزاء سیستم:

- Radar probe (3 PCS)
- Camera (w/ bracket)
- Reverse radar module
- BCM
- Instrument cluster
- DVD

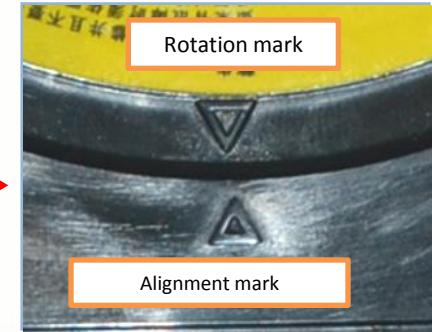
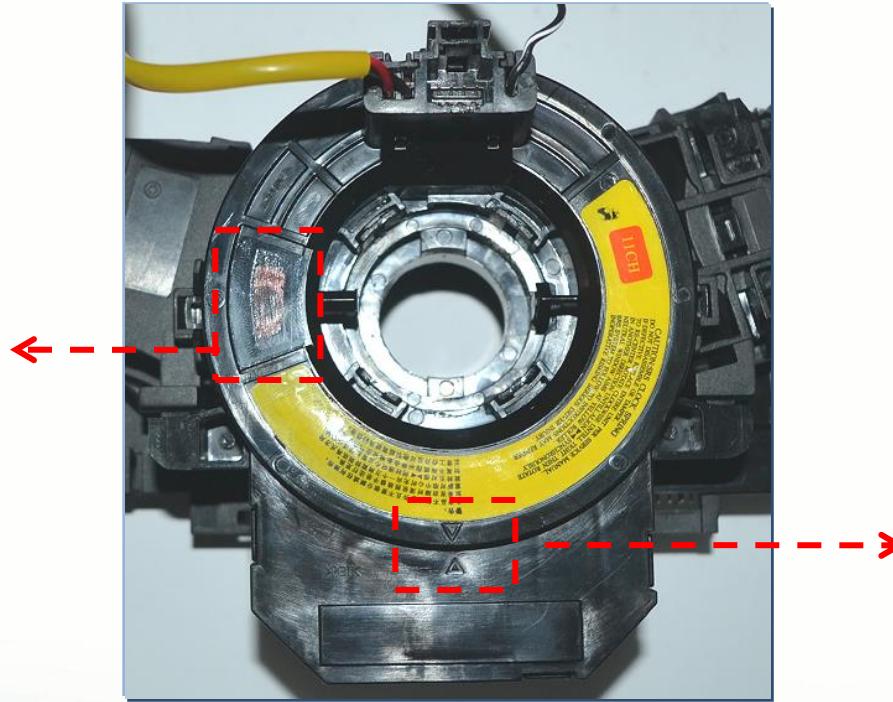


کابل حلقه‌نی (فر ساعتی)

تنظیم قبل از نصب

Refitting: 1. Align front wheels in the right front direction.

2. Rotate the spiral cable to align the rotation mark with the alignment mark.
3. In the meantime, yellow roll appears at the sight glass.

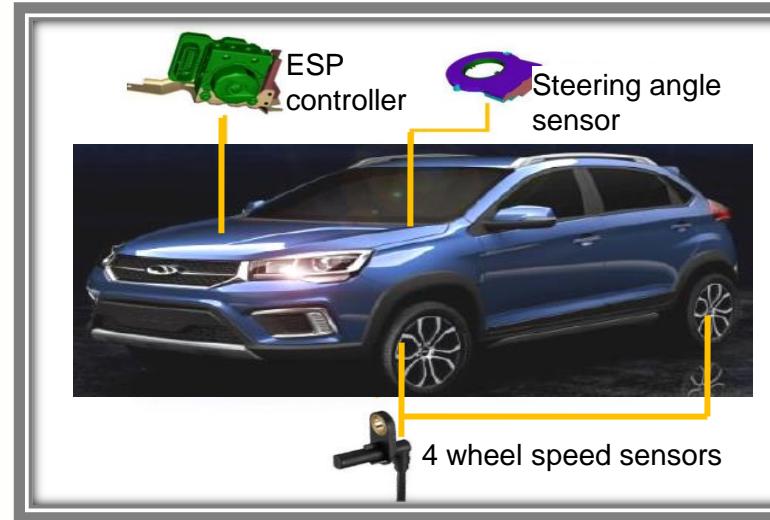


Note: The spiral cable must be centered before refitting.

ESP components

- The assembled ABS and ESP are of MANDO **MGH-80**.

Note: The yaw rate sensor is integrated into the ESP controller.



Write-in configuration code for braking controller software

The code can be written in manually (entering only 2 digits is optional) or automatically. If ICM/BCM is the original one and can be used for data communication, automatic write-in is generally applied; if the original ICM/BCM is faulty, manual write-in is required.

 **Special operation**

Write-in of software configuration information

Automatic write-in of software configuration information (written in via the complete vehicle configuration code)

Manual bleeding

Longitudinal acceleration sensor calibration (only for ESP)

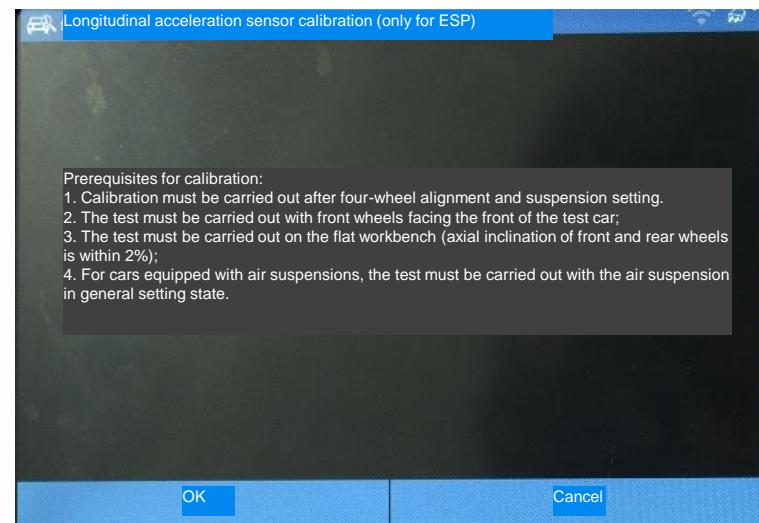
کالیبره کردن سنسور Yaw

It is necessary to use this menu to calibrate the yaw rate sensor when removing/refitting/replacing the ESP assembly or any DTC concerning the yaw rate sensor is found.

After calibration, "Lateral/longitudinal acceleration and yaw rate data flow" can be read from the data flow.

شرایط کالیبره کردن:

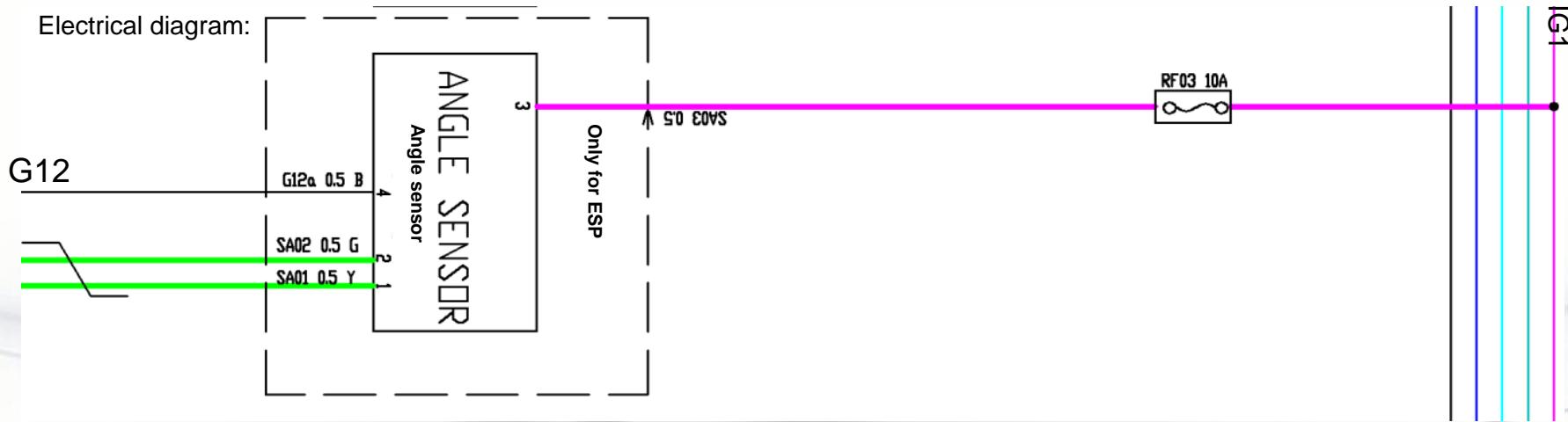
1. Calibration must be carried out after four-wheel alignment and suspension setting.
2. The test must be carried out with front wheels facing the front of the test car;
3. The test must be carried out on the flat workbench (axial inclination of front and rear wheels is within 2%);
4. For cars equipped with air suspensions, the test must be carried out with the air suspension in general setting state.



کالیبره کردن سنسور زاویه فرمان:

1. The scan tool can automatically detect if the sensor is fault or already calibrated; in case of any sensor fault, the scan tool will exit the calibration mode;
2. If the sensor has never been calibrated, the scan tool will calibrate it automatically;
3. If the sensor has ever been calibrated and "Recalibration" is prompted by the scan tool, click "Recalibration" as instructed and then click "Initial calibration". If there is no response, the scan tool will exit the calibration mode.

Electrical diagram:



A/C مشخصات سیستم

خود عیب یابی سیستم ایرکاندیشن

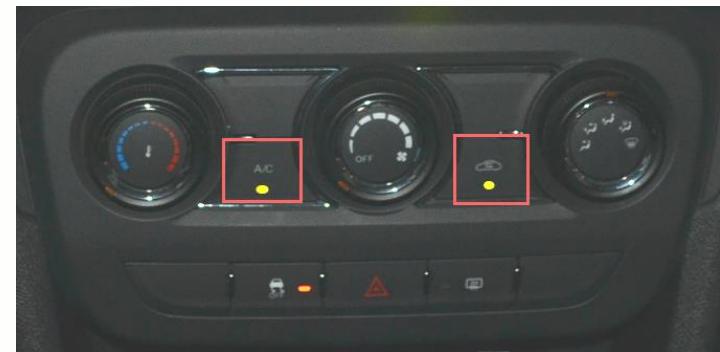
Button combination:

Press and hold "A/C" + internal circulation

buttons for more than 5 s to enter self-diagnosis mode.

Prerequisite for entering self-diagnosis mode:

A/C blower is enabled.



Self-diagnosis mode is entered:

A/C and internal and external circulation

indicator lamps stay on until self-diagnosis is ended.

A/C مشخصات سیستم

نمایش نوع ایراد در پنل A/C

Contents	Display	
	A/C indicator lamp	Circulation indicator lamp
No fault	OFF	OFF
Blower fault	ON	OFF
Adjustment failure of air mixture damper	OFF	ON
Adjustment failure of mode damper	ON	Blink once
Adjustment failure of defroster damper	ON	Blink twice
Adjustment failure of internal/external circulation damper	ON	Blink for three times
Evaporator temperature sensor fault (open or short)	ON	Blink for four times

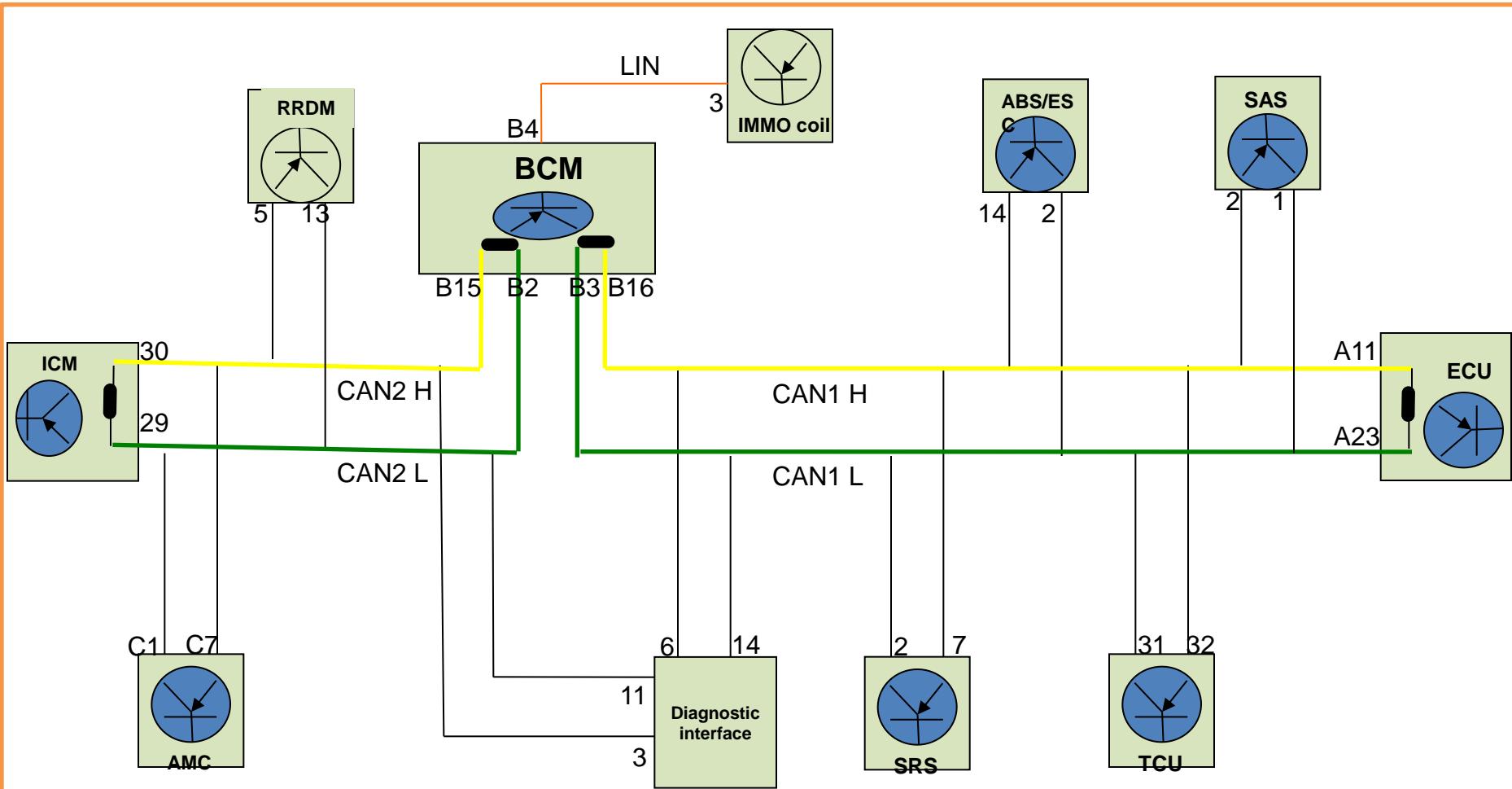
A/C مشخصات سیستم

مشخصات گاز کولر و روغن کمپرسور

Application	Filling capacity	P/N
Refrigerant: R134a	350 ± 10 g	A11-4702011
Lubricant: PAG synthetic oil	108 - 135 mL	A21-9EC4707011

Replaceable component	Filling amount of lubricant (ml)
A/C compressor	Add compressor oil according to the oil capacity poured out actually
Condenser assembly	10 mL
Evaporator	10 mL
Pipeline	5 mL/piece

Precautions: If the refrigerant and lubricant in the A/C system have been discharged during recycling or maintenance, it is a must to add refrigerant and lubricant as required.



Note: Resistance of each terminal is 120Ω ,

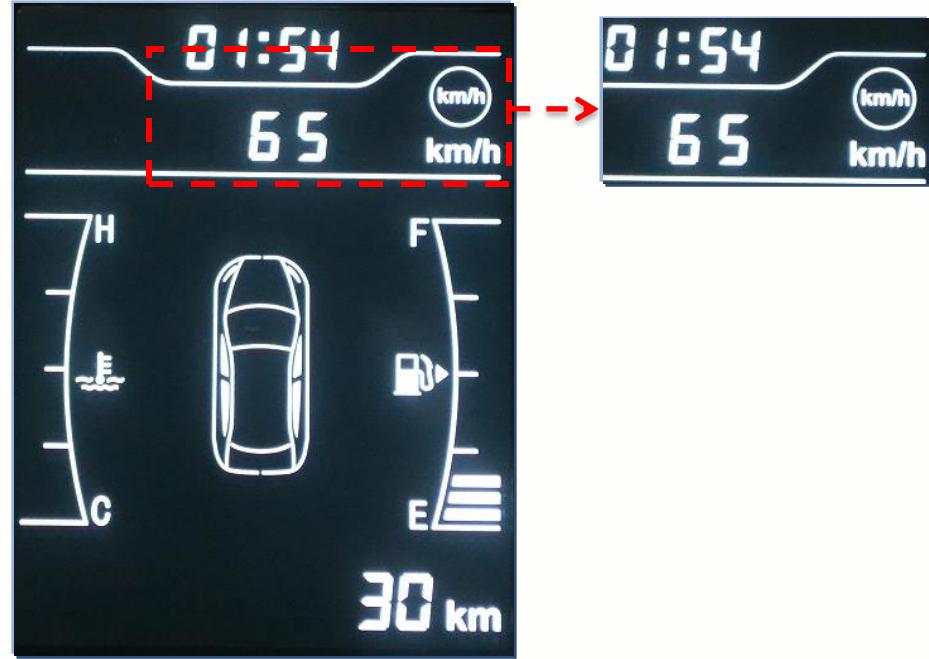
تنظیمات پنل کیلومتر

هشدار افزایش سرعت:

- Adjustable overspeed warning is applied.
- Speed limit values can be set among 30 km/h - 130 km/h - OFF circularly.
- It can be set by operating steering wheel buttons and viewed by operating DVD.
- The speed limit value will be added at the increment of 5 km/h when the button is pressed each time.

Alarm method:

- When the vehicle speed reaches or exceeds the setting value, the instrument will buzz (3 times);
- Meanwhile,  will blink (at the frequency of 1 Hz), and LCD will display the set overspeed warning value;
- Three seconds later, LCD will return to the display interface before the alarm is triggered.
- When the vehicle speed is lower than (set value - 5 km/h), the overspeed warning set value will be triggered again.

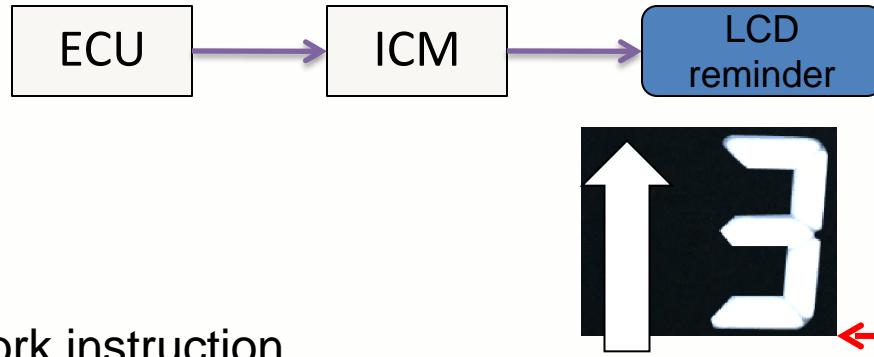


تنظیمات پنل کیلومتر

قابلیت یادآوری تعویض دنده:

Working condition:
Work under D1.

Signal source:

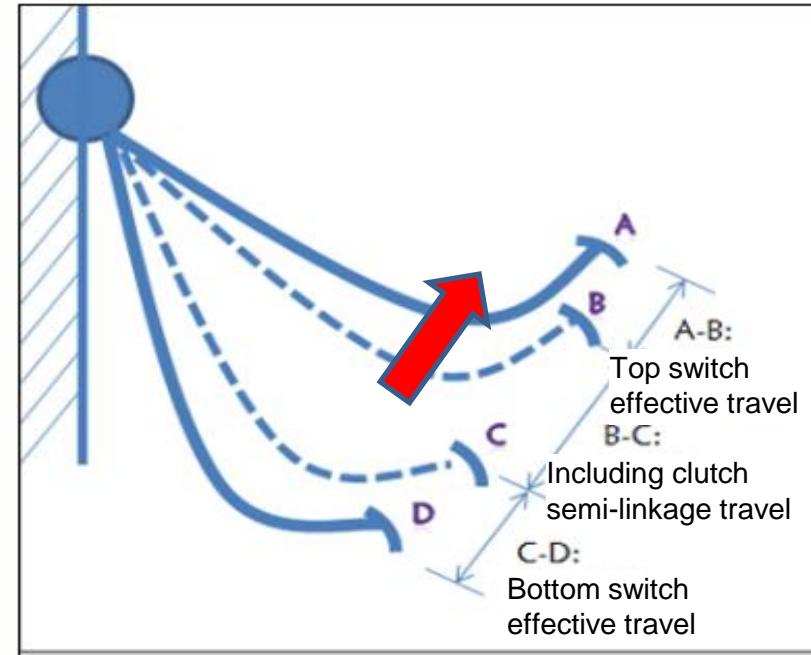


Work instruction



Target gear	Upshifting reminder	Downshifting reminder	LCD display
X	1	0	↑X
X	0	1	↓X
X	0	0	X
X	1	1	No indication

Shift reminder + start assist



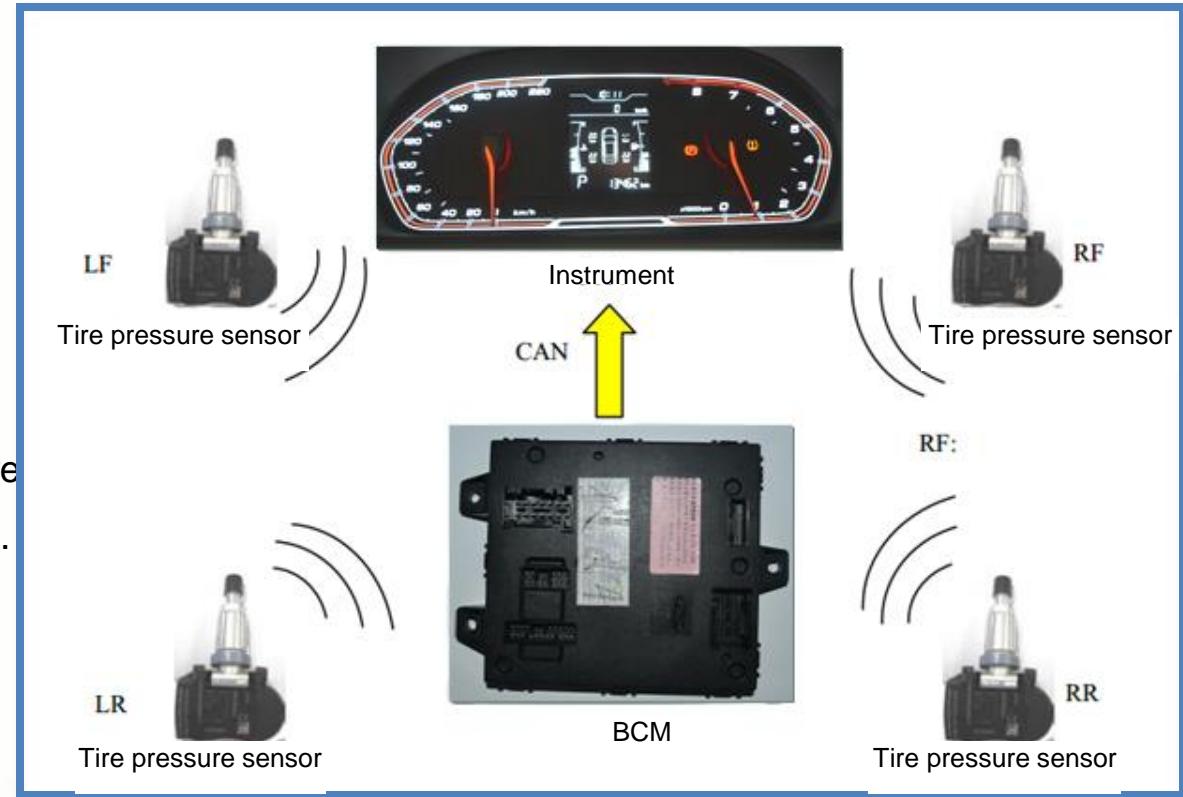
- **Shift reminder (MT):** The upshift or downshift recommendation is shown on the instrument display, to achieve the optimum matching between the engine and the transmission.
- **Start assist:** In MT start, the idle speed is increased to 850rpm. In AT start, the idle speed in D is increased to 950rpm, in R to 800rpm to avoid flameout.
- When the car speed reaches to or above 5km/h, the start assist is turned off.

Overview:

- The system is an active security configuration.
- The system monitors the tire pressure and temperature in real time.
- The instrument only indicates tire pressure.
- When tire pressure and temperature are abnormal, the MIL will come on.

System components:

- Instrument:
- BCM;
- Tire pressure sensor.



System matching

Left front tire pressure self-learning

Right front tire pressure self-learning

Left rear tire pressure self-learning

Right rear tire pressure self-learning

Precautions:

1. The learning tire must correspond to the deflated tire;
2. Operate one tire each time and do not deflate (or inflate) other tires in the meantime;
3. Keep away from other cars equipped with tire pressure sensors, so as to avoid learning by mistake or interference.

Enter tire pressure self-learning menu

Click the tire menu to be learned

Deflate the corresponding tire rapidly (about 20 s)

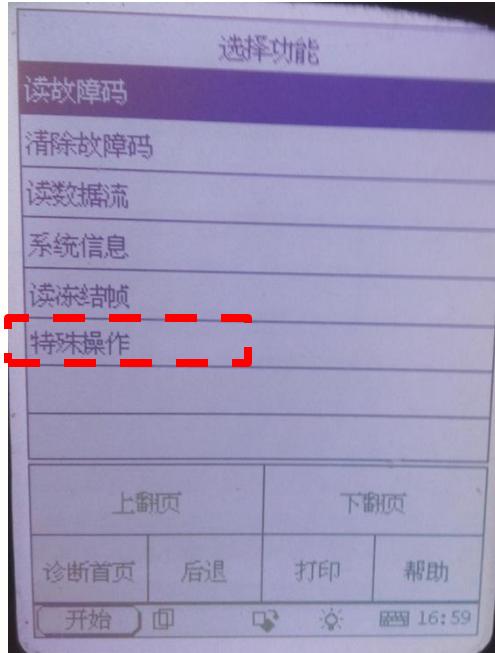
Observe the pressure data of corresponding tire on the instrument. The left/right turn signal lamp and tire pressure lamp stop blinking.

1 minute later

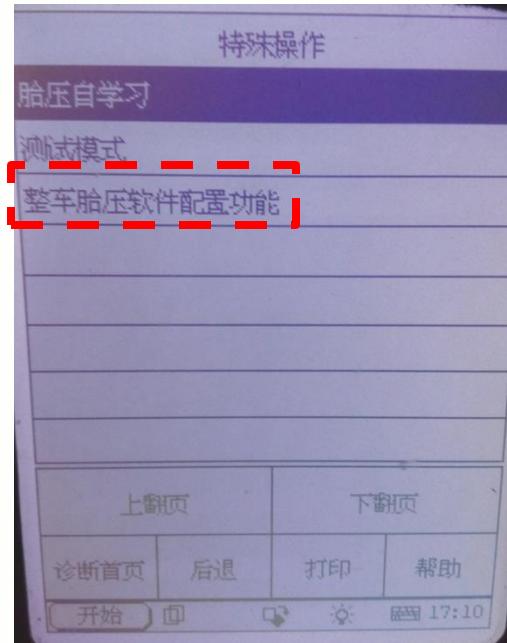
Match other tires one by one and observe the data.

Adjust tire pressure and perform road test.

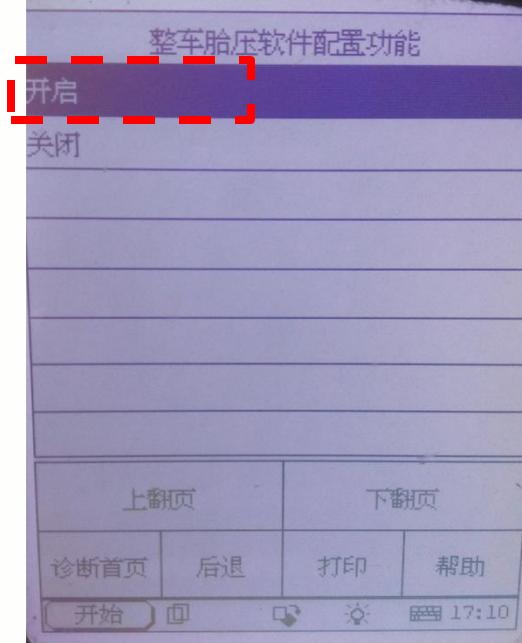
Configuration of tire pressure receiver and instrument



Choose "Special operation" in the TPMS.



Choose "Complete vehicle tire pressure software configuration function"

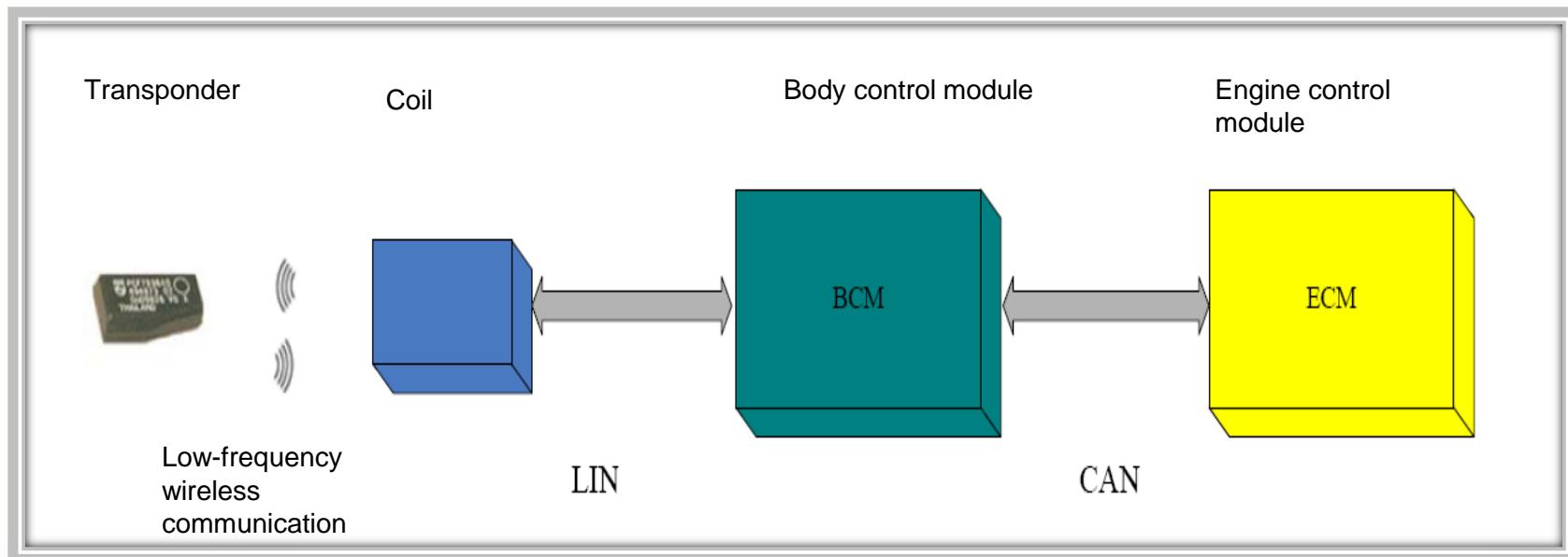


Choose "Start"

Note: It is necessary to conduct this operation after replacing BCM; otherwise, tire pressure information will not be displayed on the instrument.

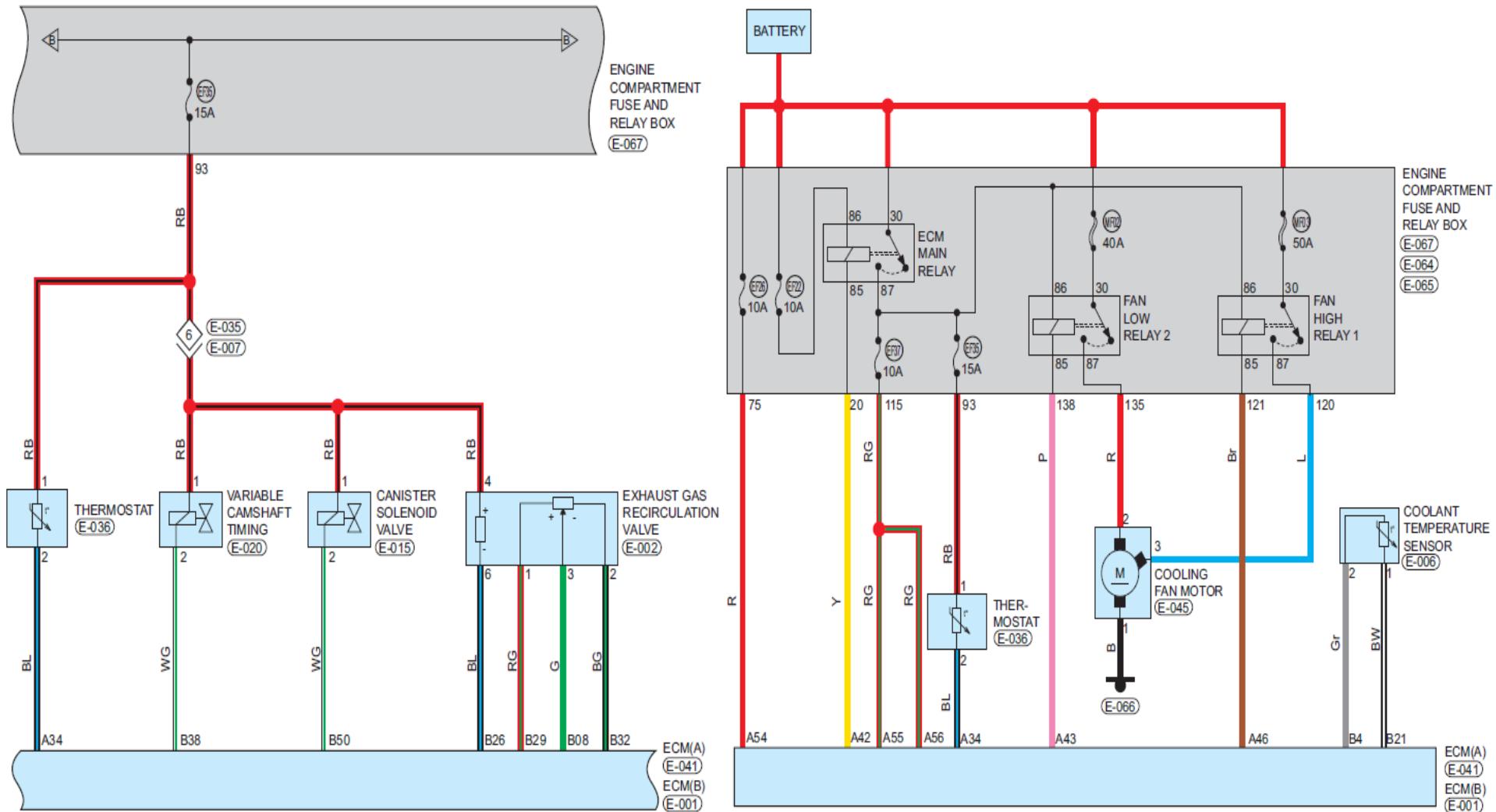
IMMO system components

The IMMO system consists of transponder (in the key), IMMO coil (on the ignition switch), body control module (BCM) and engine control module (ECU).

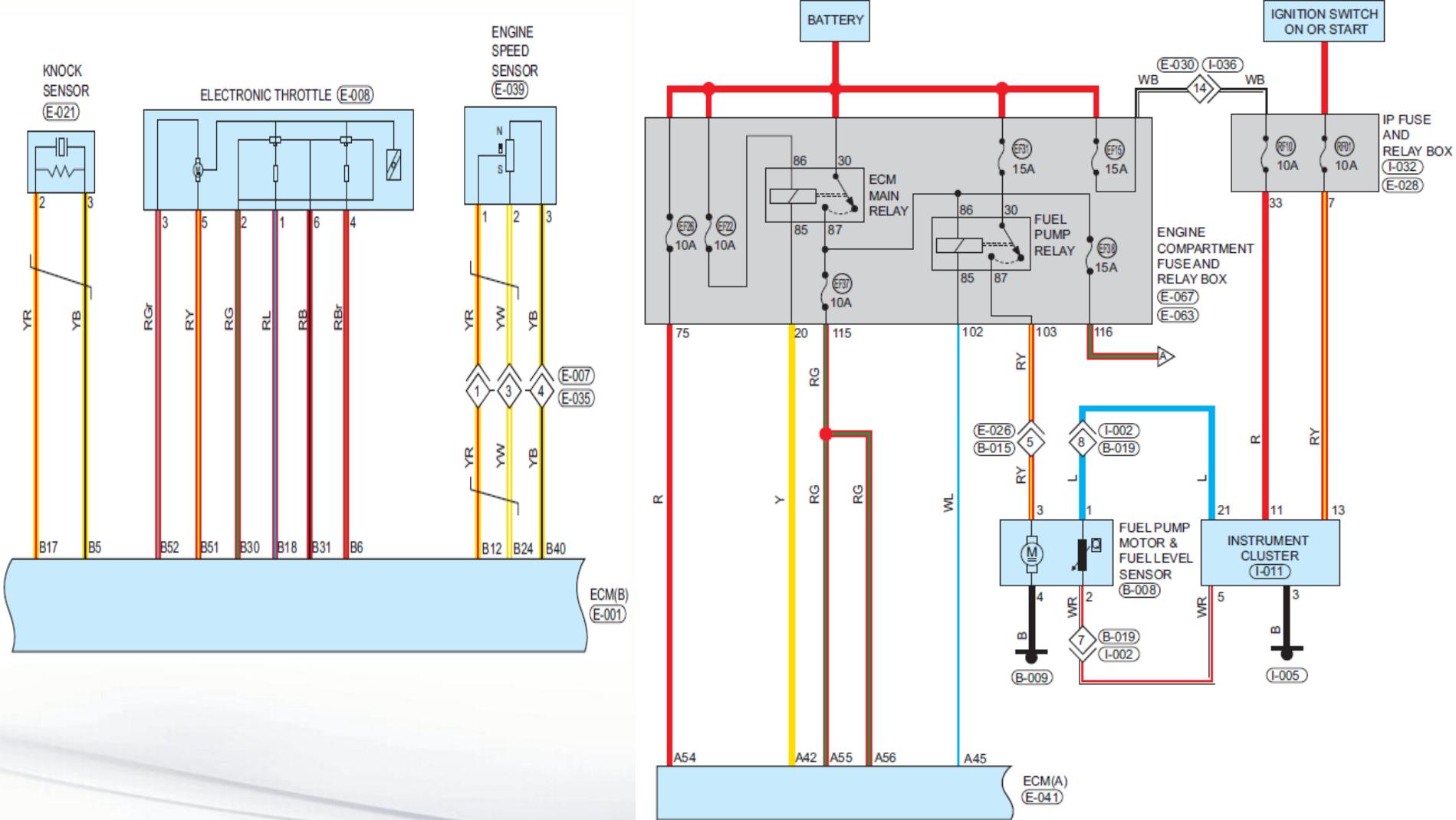


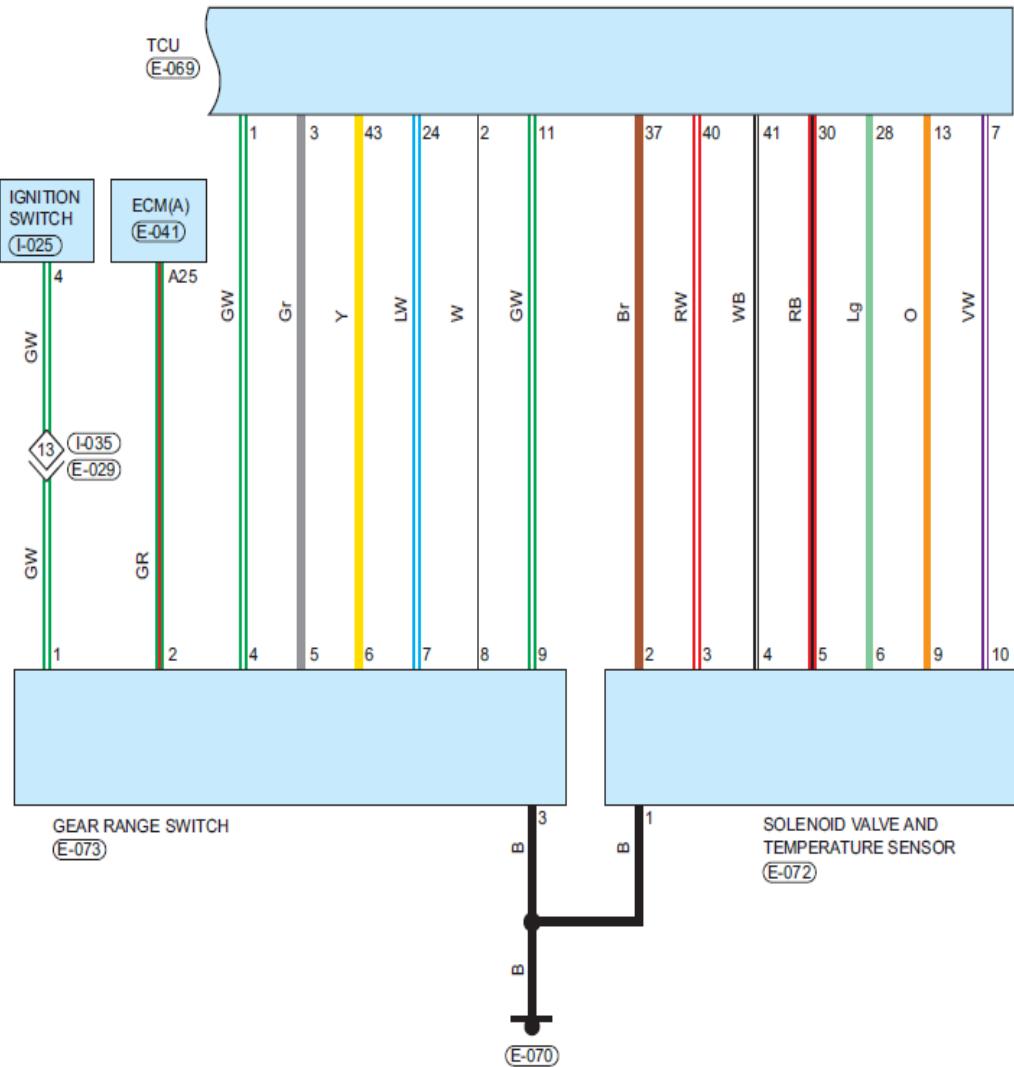
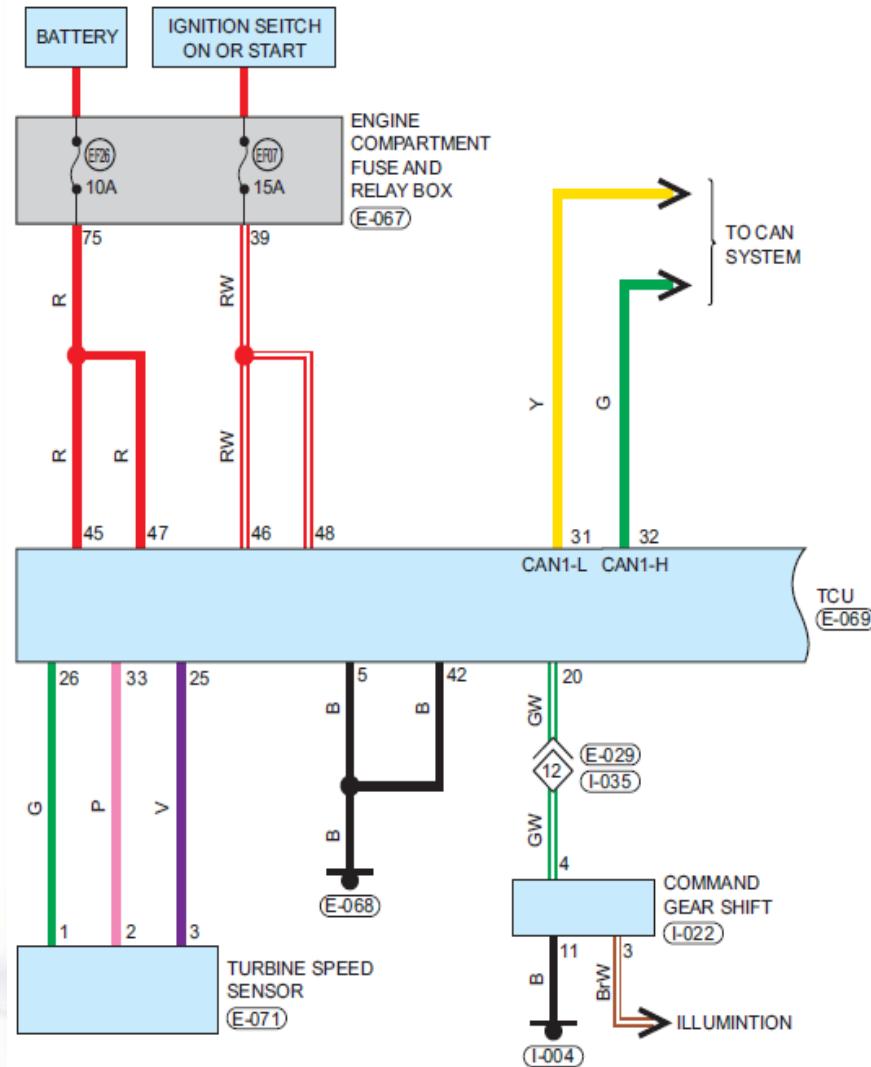
NOTE: Only **pilot models** are equipped with the engine IMMO system.

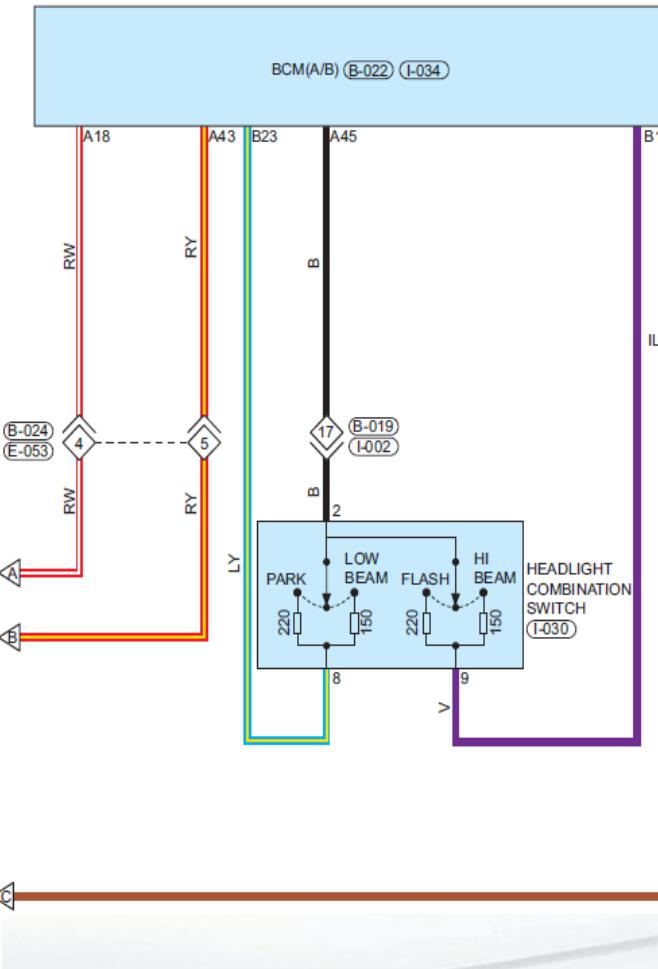
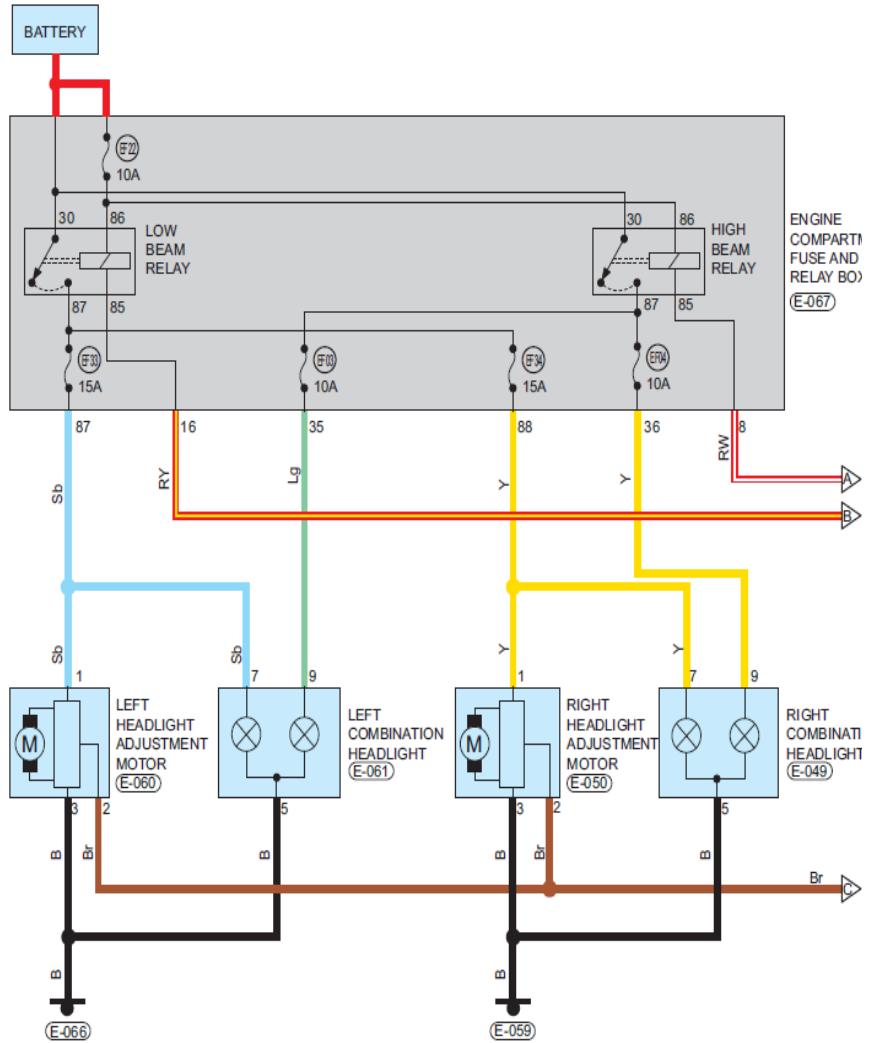
سیستم مدیریت موتور

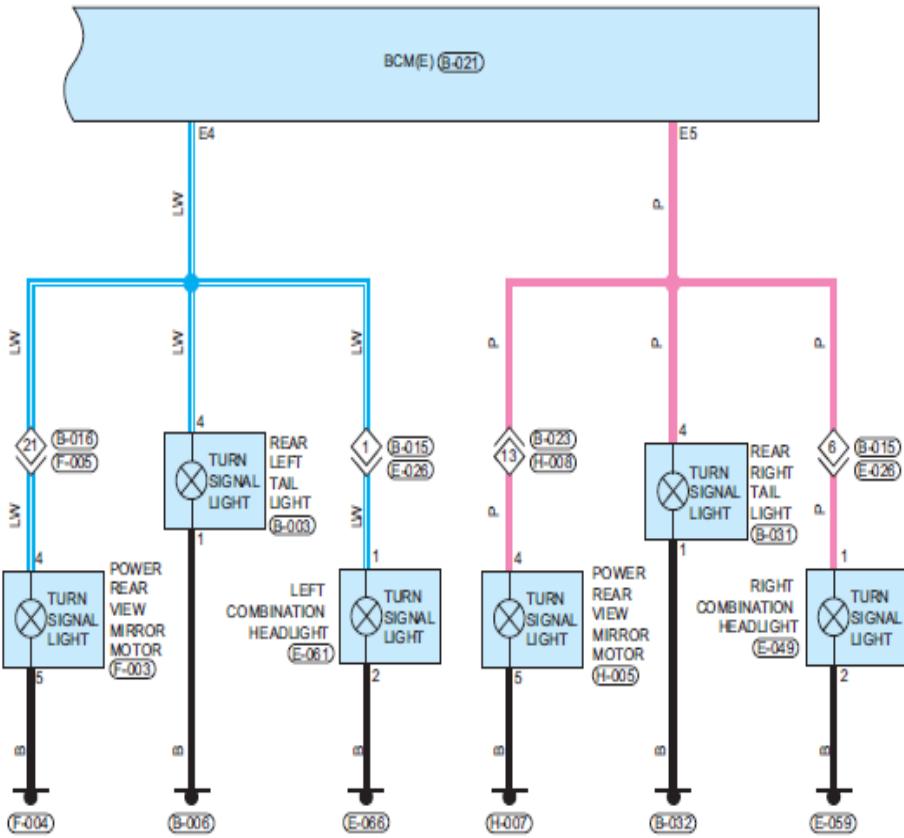
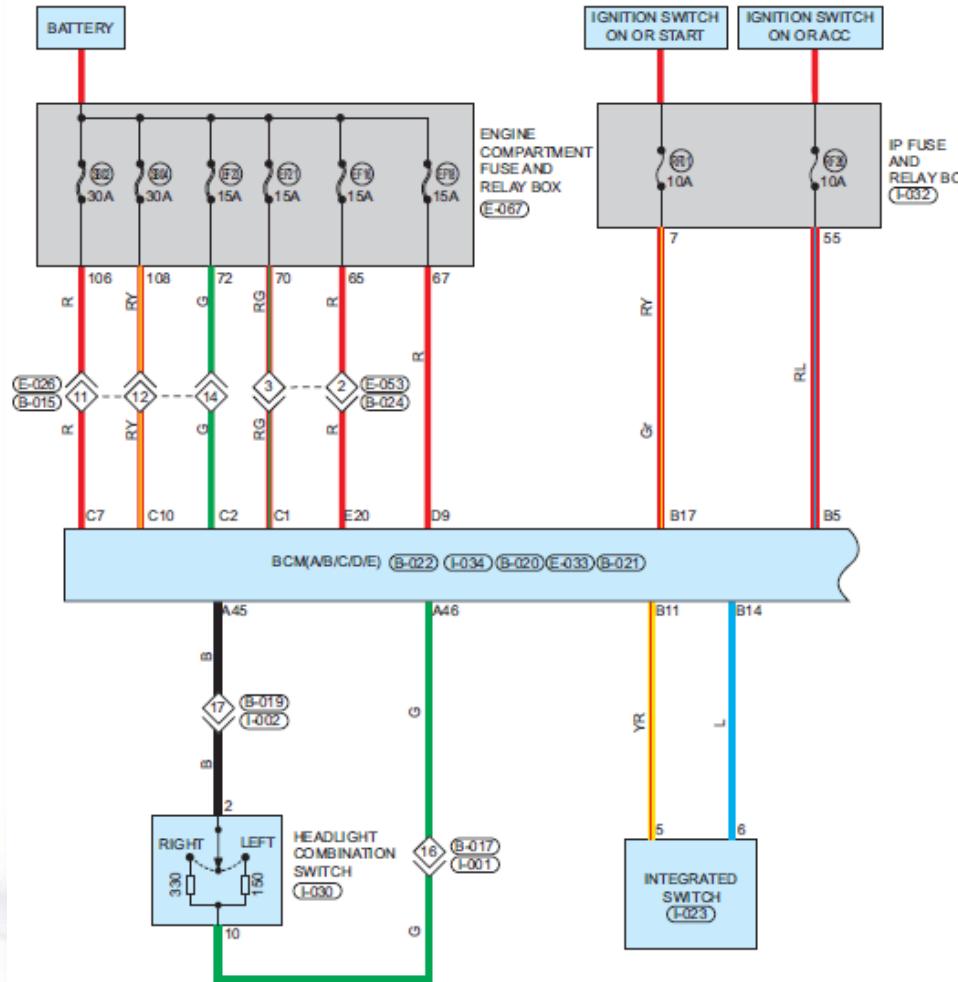


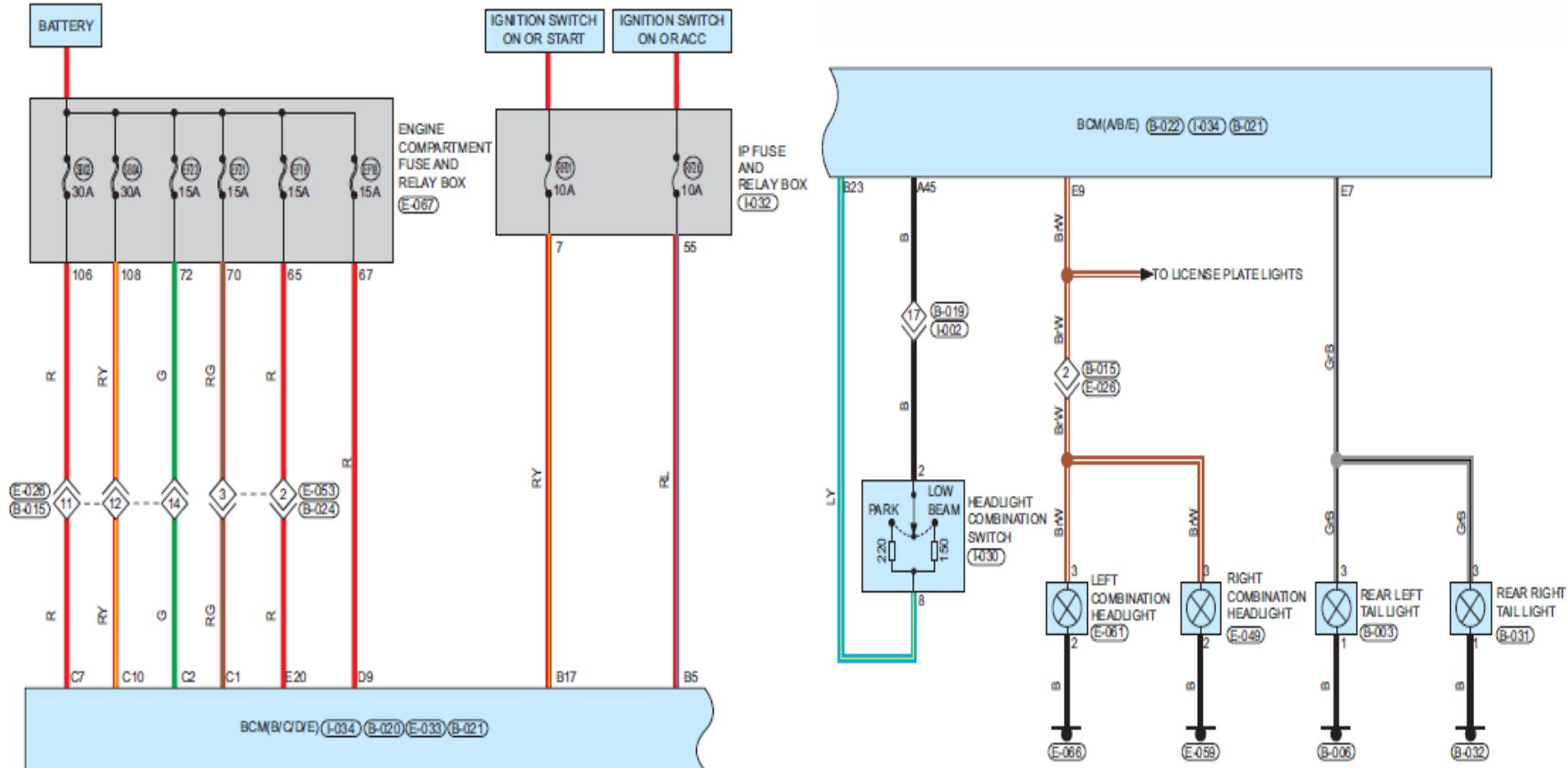
سیستم مدیریت موتور

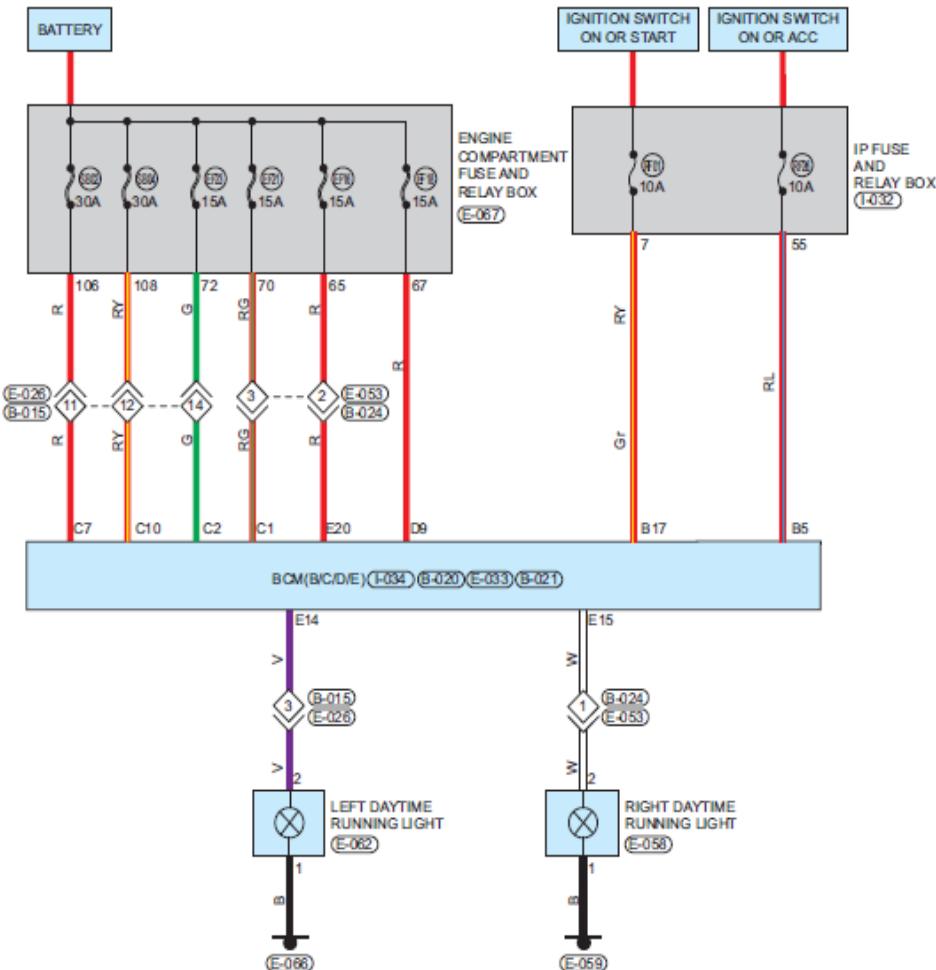
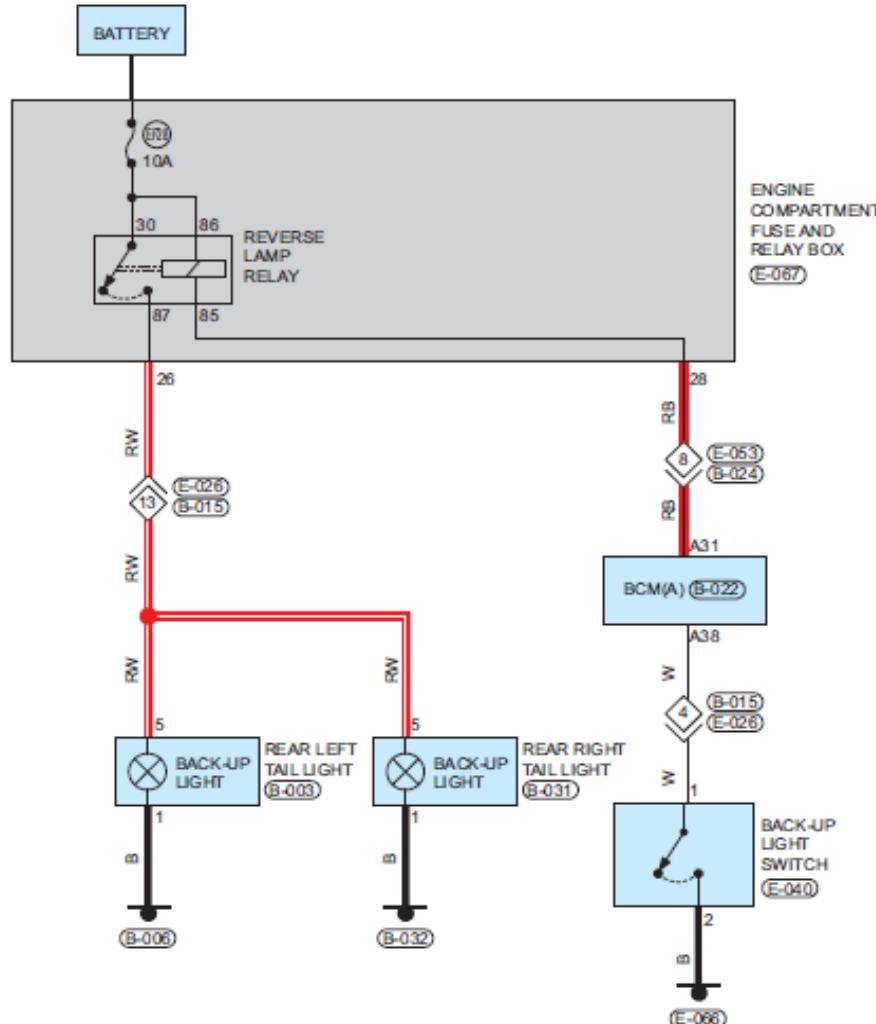




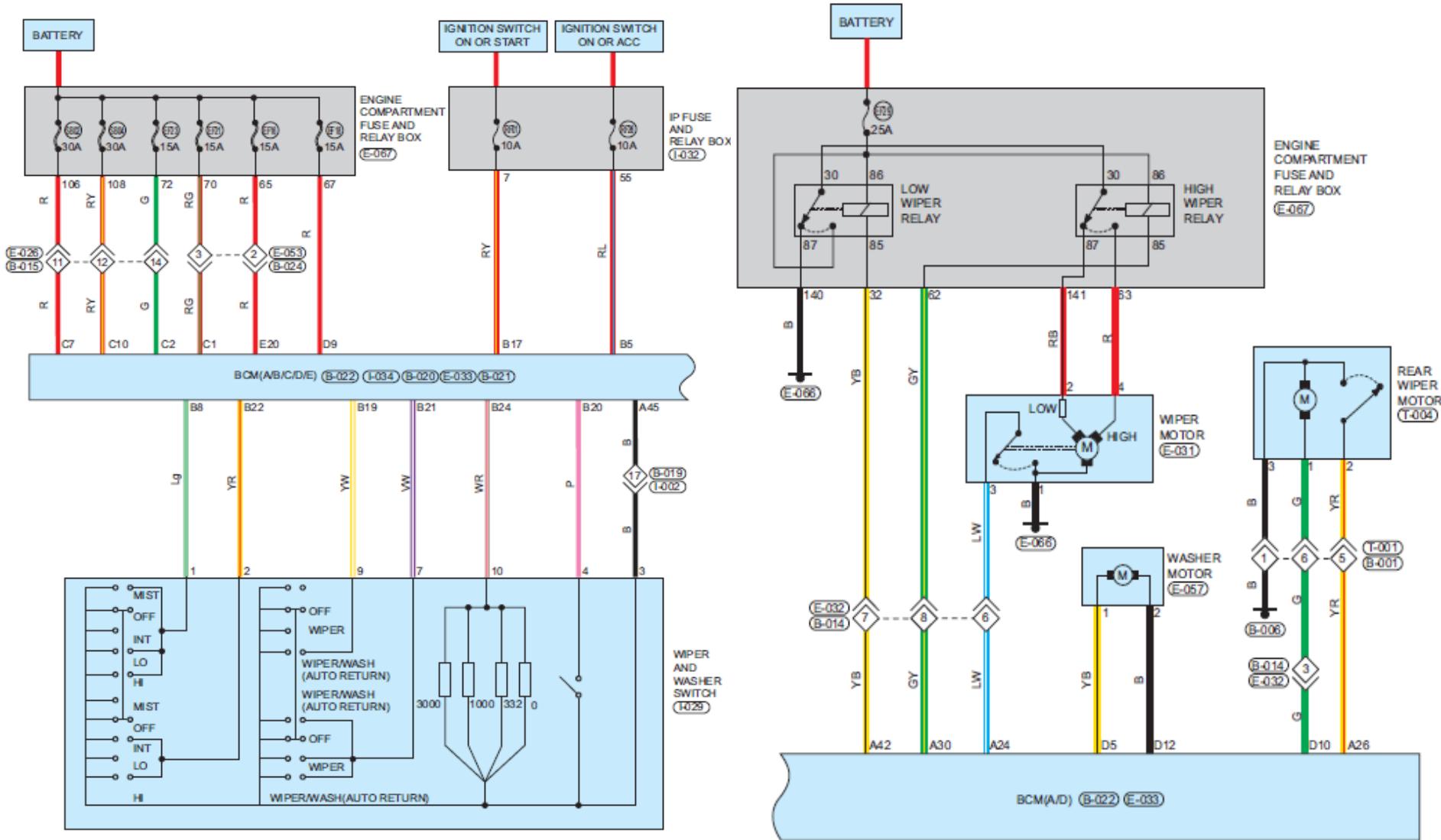




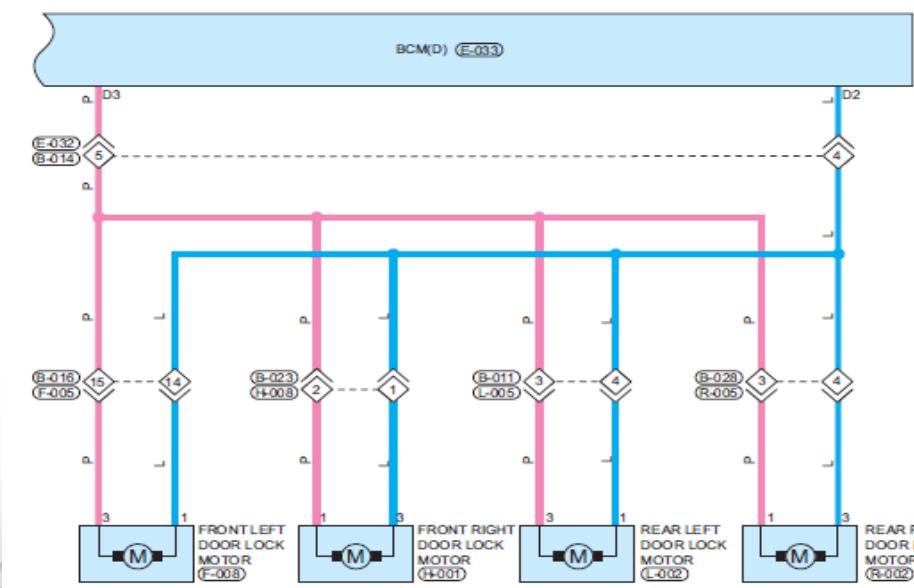
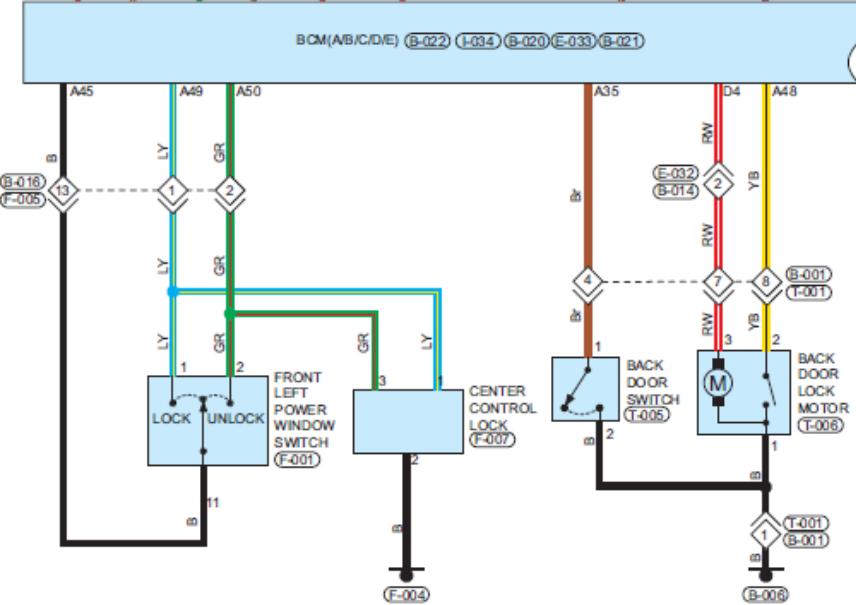
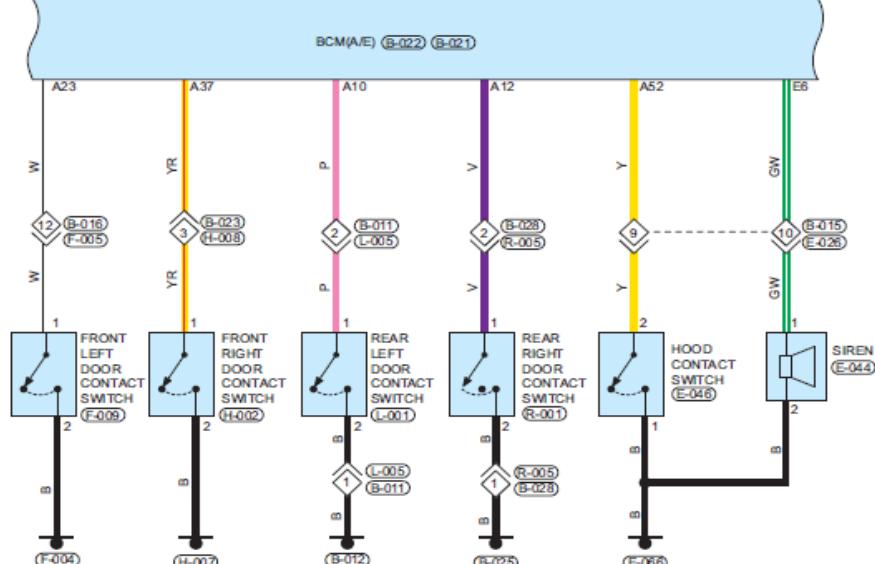
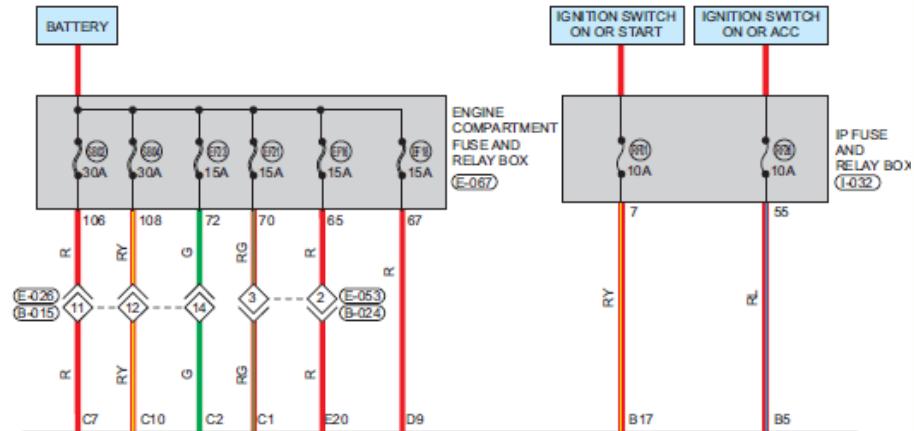


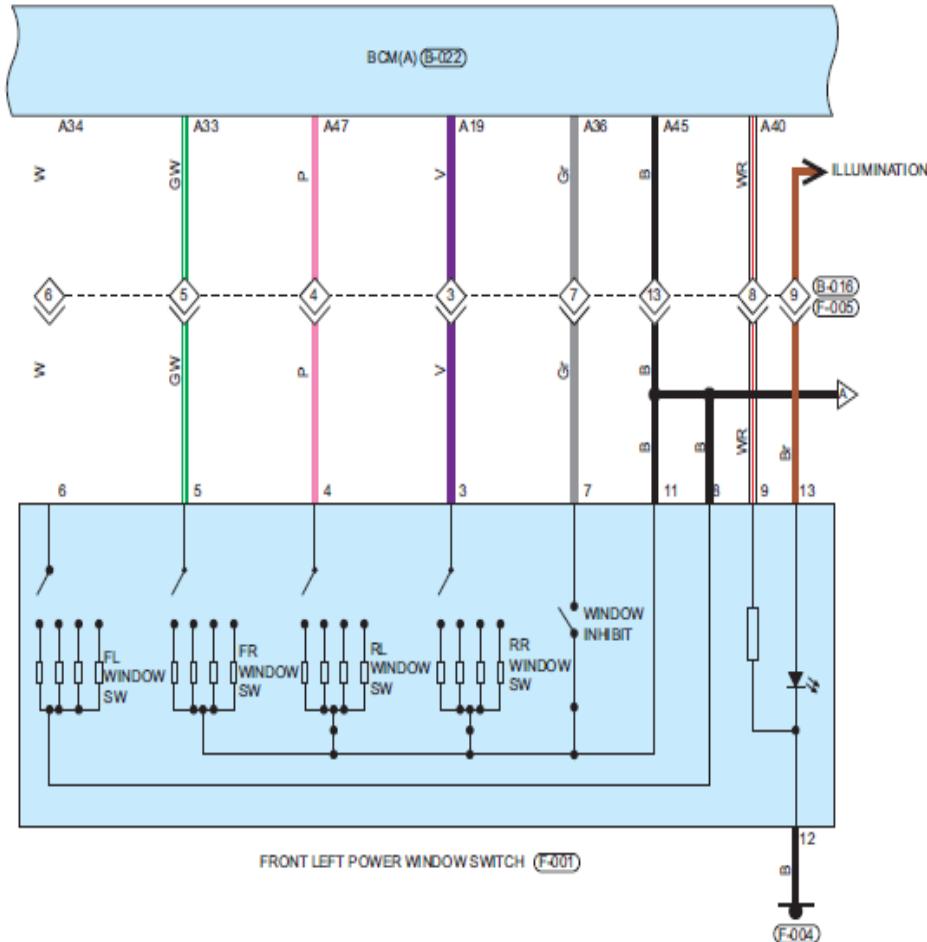
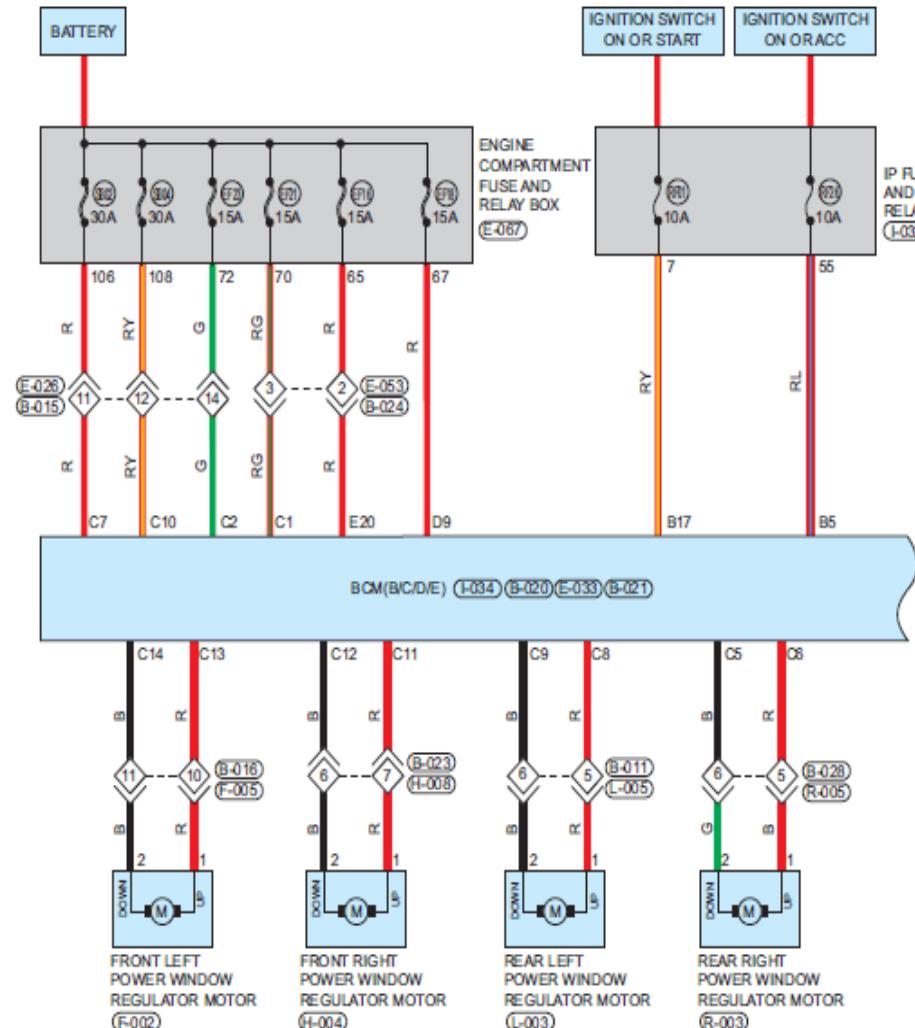


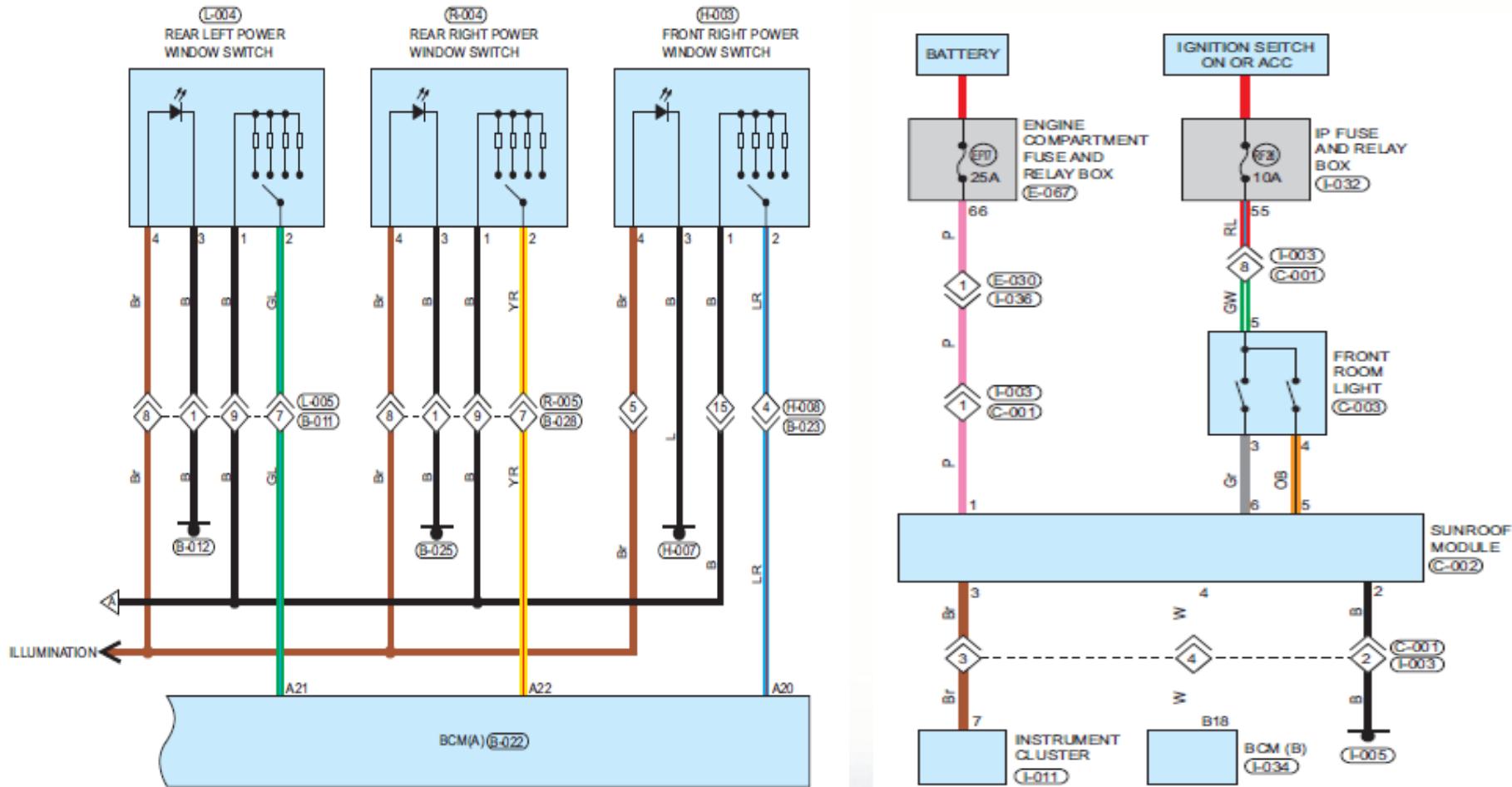
سیستم برف پاک کن



سیستم قفل مرکزی

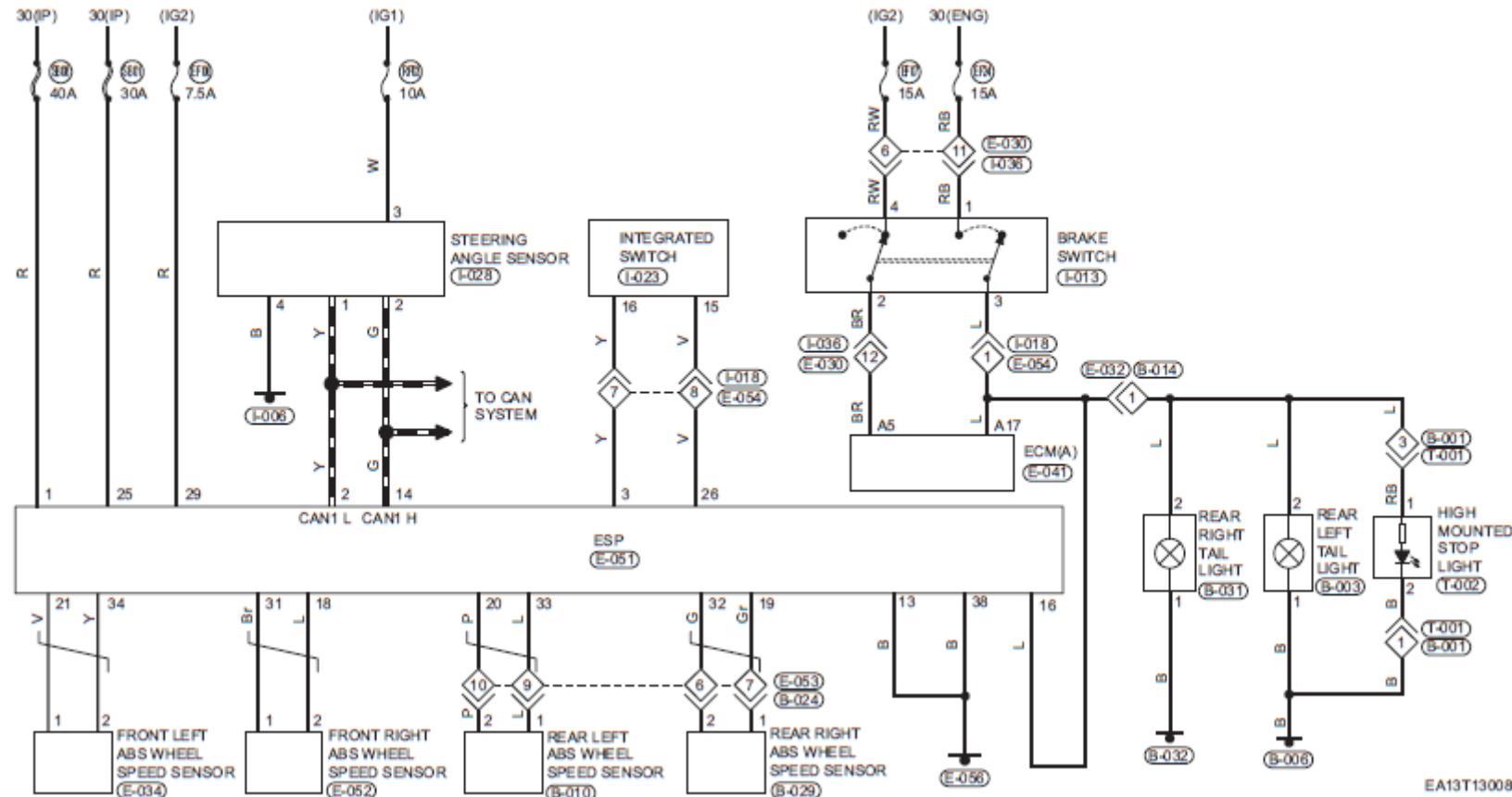






ESP (ABS)/Brake Light

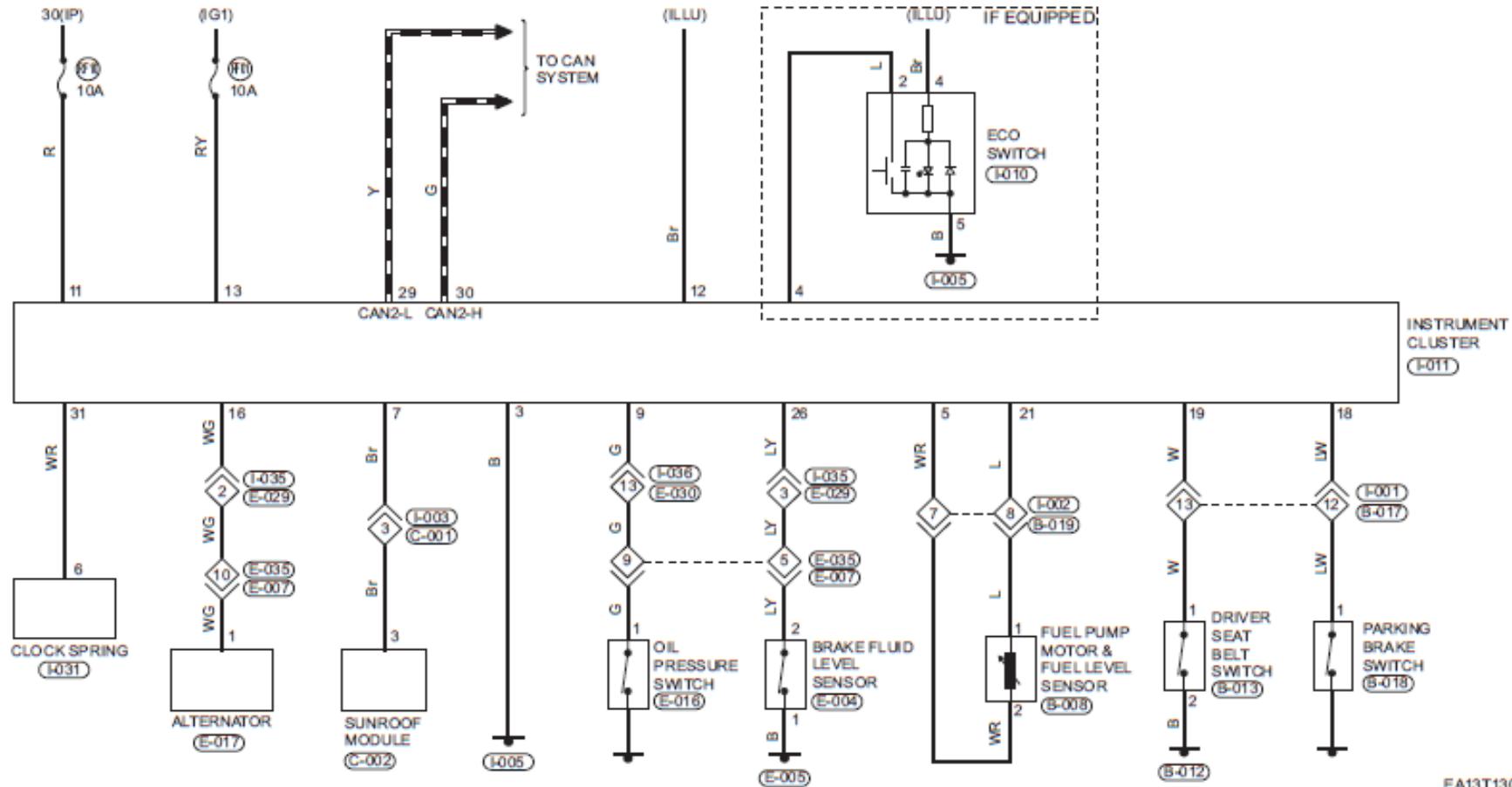
Circuit Diagram (Page 1 of 1)



سیستم نشانگرها (پنل کیلومتر)

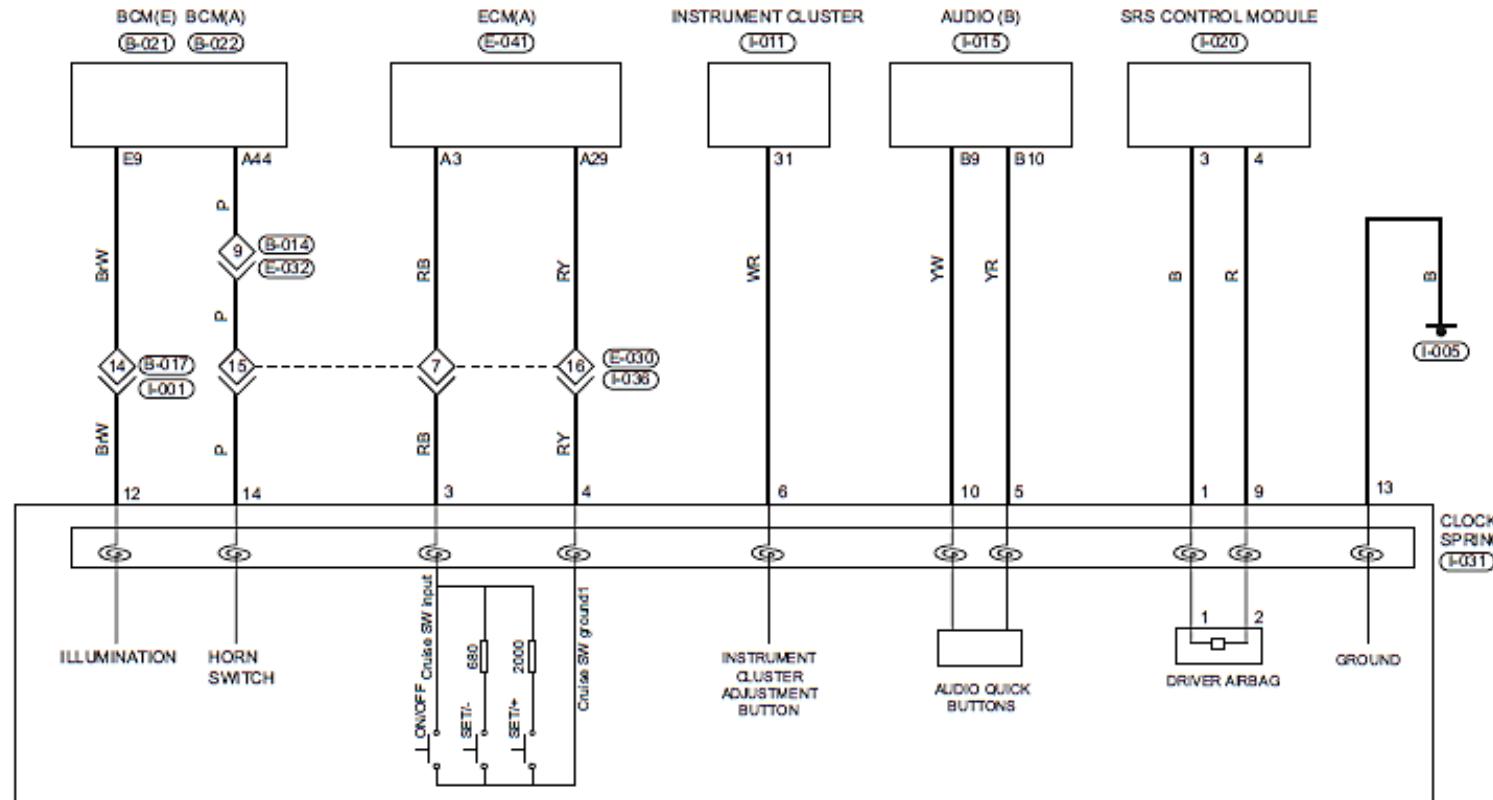
Instrument Cluster

Circuit Diagram (Page 1 of 1)



Clock Spring

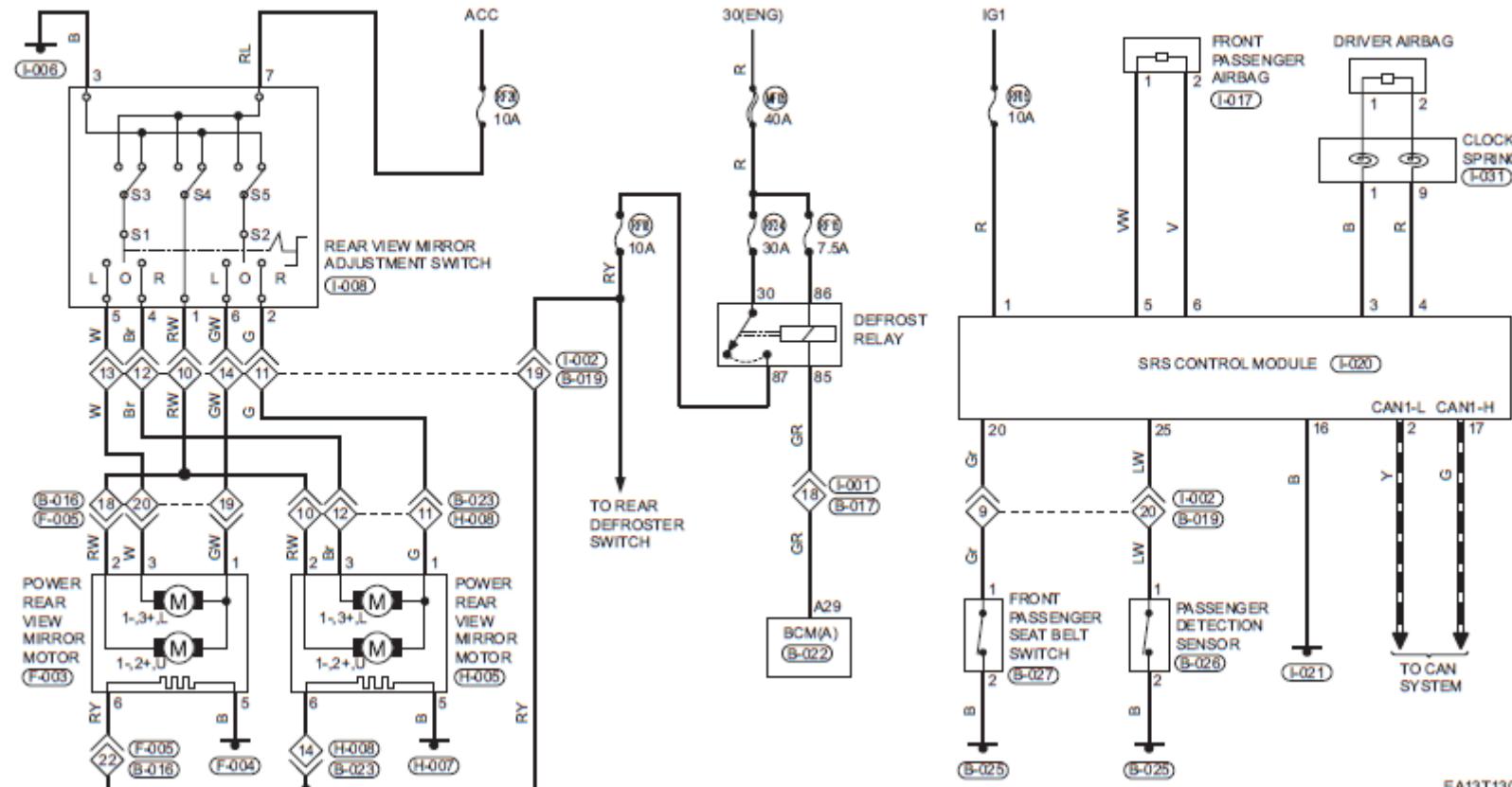
Circuit Diagram (Page 1 of 1)



EA13T130260

Supplemental Restraint System/Power Rear View Mirror

Circuit Diagram (Page 1 of 1)



EA13T130270

CAN System/Diagnostic Interface

Circuit Diagram (Page 1 of 1)

