

CLUSTER**8210-01****INDEX****CLUSTER****GENERAL**

1. SPECIFICATIONS.....	3
------------------------	---

**OVERVIEW AND OPERATING
PROCESS**

1. DESCRIPTIONS OF INDICATOR DISPLAY.....	4
2. CONFIGURATION.....	10
3. WARNING LIGHTS AND INDICATORS...	20
4. SELF-DIAGNOSIS CHECK.....	27
5. BUZZER OUTPUT SPEC.....	28
6. CIRCUIT DIAGRAM.....	29

REMOVAL AND INSTALLATION

8210-01 CLUSTER.....	31
----------------------	----



دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



CLUSTER**8010-01****GENERAL****1. SPECIFICATIONS**

Item		Specification
Rated voltage		DC 12V
Operating voltage		DC 9 V ~ 16 V
Checking voltage		DC 13.5 V
Operating temperature		-30 °C ~ +80 °C
Storage temperature		-40 °C ~ +85 °C
Illumination color	Dial	White
	Pointer	Red
	LCD	Red
Gear position display in A/T (Left hand of LCD display)		P, R, N, D, 1, 2, 3, 4, 5 and 6

دیجیتال خودرو سامانه (مسئولیت محدود)
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

Modification basis	
Application basis	
Affected VIN	

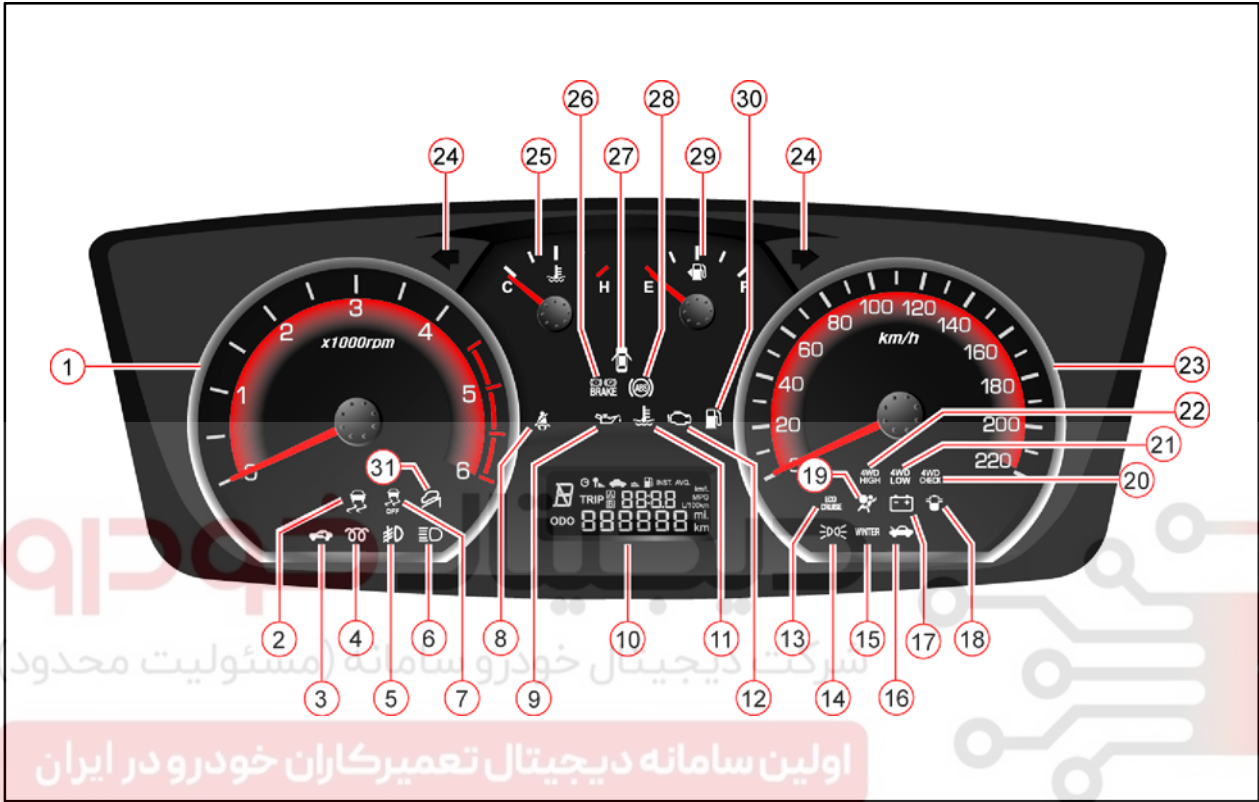
CLUSTER

undefined

OVERVIEW AND OPERATING PROCESS

1. DESCRIPTIONS OF INDICATOR DISPLAY

It sends and receives information to/from each unit through CAN communication line. The LCD display and separate ESP ON/OFF indicator are newly added.



1. Tachometer

2. ESP indicator/warning light

3. Immobilizer indicator

4. Glow indicator

5. Front fog light indicator

6. High beam indicator

7. ESP OFF indicator

8. Seat belt reminder

9. Engine oil pressure warning light

10. LCD Display

11. Engine overheat warning light

12. Engine check warning light

13. Auto cruise indicator

14. Light indicator

15. Winter mode indicator
16. Engine hood open warning light

17. Battery charge warning light

18. Water separator warning light

19. Air bag warning light

20. 4WD CHECK warning light

21. 4WD LOW indicator

22. 4WD HIGH indicator

23. Speedometer

24. Turn signal indicator

25. Coolant temperature gauge

26. Brake warning light

27. Door ajar warning light

28. ABS warning light

29. Fuel gauge

30. Low fuel level warning light

31. HDC indicator

CLUSTER

undefined

Modification basis	
Application basis	
Affected VIN	

► System Layout

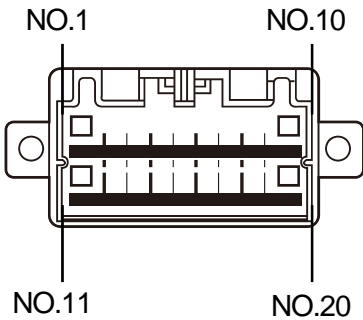
Front view



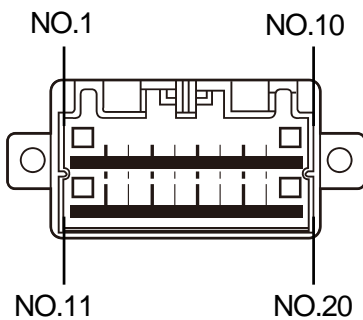
Rear view



A. Main connector (white)



B. Sub connector (gray)

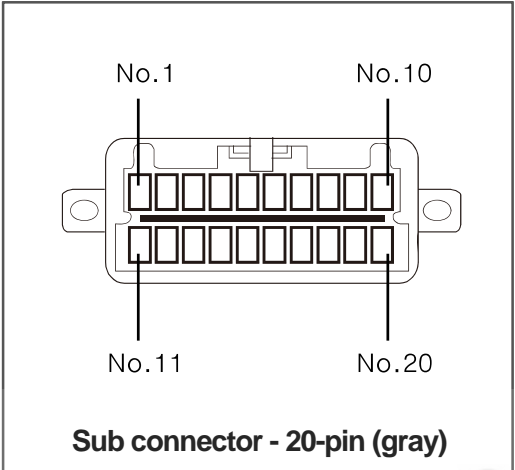
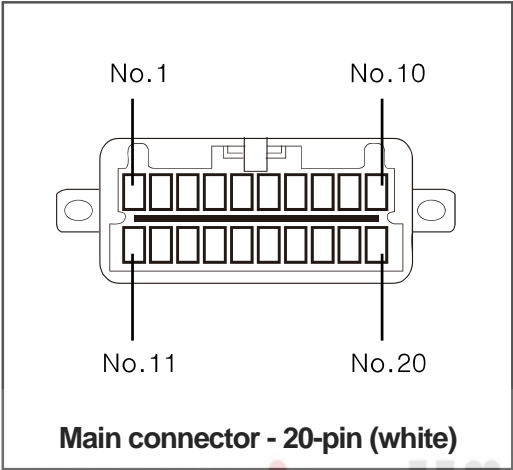


Modification basis	
Application basis	
Affected VIN	

CLUSTER
undefined

► Connector Pin Arrangement

The connector pin sections illustrated below are viewed from the front of the instrument cluster. The arrangement of the pins is the same for both the main connector and the sub connector.










- 1. -
- 2. Hood open
- 3. Seat belt - passenger's seat
- 4. -
- 5. -
- 6. Front fog lamp
- 7. -
- 8. Engine CHECK warning light
- 9. Charge
- 10. IGN 2
- 11. -
- 12. Air bag
- 13. Seat belt - driver's seat
- 14. High beam (-)
- 15. Right turn signal lamp (+)
- 16. High beam (+)
- 17. Left turn signal lamp (+)
- 18. Oil pressure
- 19. Parking brake signal input (STICS)
- 20. -

- 1. -
- 2. -
- 3. 4P output
- 4. Buzzer output
- 5. Illumination (+)
- 6. -
- 7. Check engine (GSL only)
- 8. Door open
- 9. -
- 10. Battery
- 11. -
- 12. Fuel input signal
- 13. TRIP mode/reset switch
- 14. Manual transmission N (neutral) input
- 15. Manual transmission R (reverse) input
- 16. CAN LOW
- 17. CAN HIGH
- 18. AGND (fuel -)
- 19. MICOM ground
- 20. IGN 1

Modification basis	
Application basis	
Affected VIN	











► Indicators on Instrument Cluster

No.	Symbol	Item	Bulb Type	Power	Turning ON condition
1		Turn signal lamp-L	LED	Multifunction switch	When activating switch
2		Turn signal lamp-R	LED	Multifunction switch	When activating switch
3		4WD HIGH indicator	LED	IGN	IGN ON/ CAN signal input
4		Winter mode indicator	LED	IGN	IGN ON/ CAN signal input
5		Front fog lamp indicator	LED	Fog lamp relay	When activating switch
6		Cruise control indicator	LED	IGN	IGN ON/ CAN signal input
7		Light illumination indicator	LED	BATT	Tail lamp ON
8		High beam indicator	LED	Headlamp high beam relay	When activating switch
9		ABS warning lamp	LED	IGN	IGN ON/ CAN signal input (ABS, EBD)
10		Glow indicator (DSL only)	LED	IGN	IGN ON/ CAN signal input
11		Immobilizer indicator	LED	IGN	IGN ON/ CAN signal input
12		Low fuel level warning light	LED	IGN	When analog inputting fuel level

Modification basis	
Application basis	
Affected VIN	

CLUSTER







undefined

No.	Symbol	Item	Bulb Type	Power	Turning ON condition
13		Engine check warning lamp	LED	IGN	IGN ON/ CAN signal input
14		4WD LOW indicator	LED	IGN	IGN ON/ CAN signal input
15		ESP indicator/warning light	LED	IGN	IGN ON/ CAN signal input (ESP & buzzer activated)
16		ESP OFF indicator	LED	IGN	IGN ON/ CAN signal input
17		Brake warning light	LED	IGN	IGN ON, CAN signal input (EBD)
18		4WD CHECK indicator	LED	IGN	IGN ON/ CAN signal input
19		Air bag warning lamp	LED	IGN	Signal input
20		Door ajar warning light	LED	BATT	When door opened
21		Charge warning lamp	LED	IGN	Charge system fault
22		Seat belt warning light	LED	IGN	Switch input

CLUSTER

undefined

Modification basis	
Application basis	
Affected VIN	

No.	Symbol	Item	Bulb Type	Power	Turning ON condition
23		Engine oil pressure warning lamp	LED	IGN	Signal input
24		Water separator warning light (DSL only)	LED	IGN	IGN ON/ CAN signal input
25		Engine coolant overheat warning light	LED	IGN	IGN ON/ CAN signal input
26		Engine hood open warning lamp	LED	IGN	Switch ground
27		EBD warning light	LED	IGN	CAN signal input
28		HDC indicator	LED	IGN	Switch Input

**NOTE**

There are two colors (green & red) for HDC symbol.

Modification basis	
Application basis	
Affected VIN	

CLUSTER

undefined

2. CONFIGURATION

1) RPM Gauge



The tachometer indicates engine speed in revolutions per minute. Multiply 1,000 to the current number, then it will be the current number of engine revolutions.

Under the normal engine operating temperature, the proper idling speed is 700 ~ 800 rpm. The red zone (danger rpm range) starts from 4,500 rpm.

1. Connect the tachometer for tune-up test and start the engine.
2. Eliminate the hysteresis by tapping the tachometer.
3. Compare the values on the tester and tachometer and replace the tachometer if the tolerance is excessive.

Description	Specification(VIN=13.5 ± 0.1V, Temperature: 25°C)							GSL
Engine speed(rpm)	750	1000	2000	3000	4000	5000	6000	7000
Tolerance(rpm)	+50	+100	+100	+100	+100	+100	+100(GSL)	+100
	+100	-100	-100	-100	-100	-100	-100(GSL)	+100

Check Method

If the tachometer (engine rpm gauge) pointer vibrates or stops moving at a certain range, or abnormal noises are heard from the tachometer, the tachometer may have a malfunction. If you have reason to suspect that the reading from the tachometer differs from the actual engine speed (rpm), connect a diagnostic device and compare the value on tachometer with the reading from the diagnostic device.

2) Speedometer Gauge



The speedometer indicates the vehicle speed by calculating the signals from the rear left and rear right wheel speed sensors through ABS or ESP unit. (For the vehicle without ABS or ESP, the signals are received from the EMS)

If the speedometer gauge vibrates, stops at a certain range or makes an abnormal noise, there could be defectives in speedometer. **However, these symptoms also could be occurred when the tire has uneven wear, different tire inflation pressures or different tire specifications.**

Perform the speedometer test regarding the tolerance as described. However, it is not similar simple work in field due to lack of measuring conditions such as test equipment and preciseness.

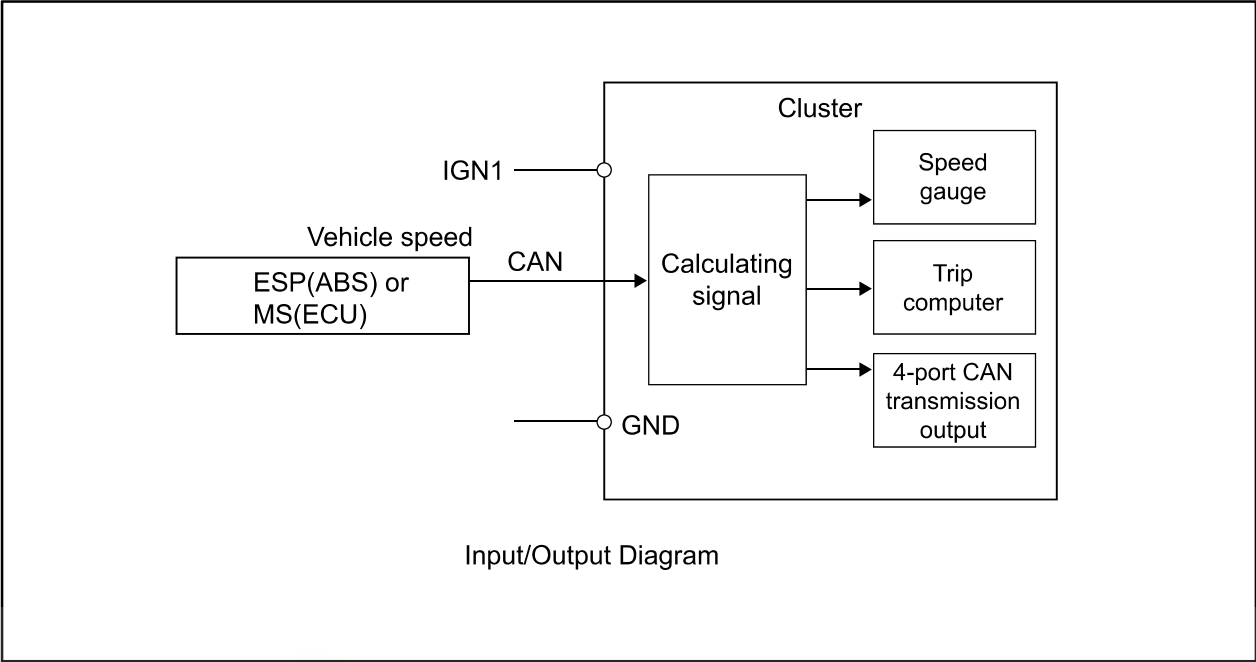
1. Check the allowable tolerance of the speedometer and operations of the trip odometer by using a tester.
2. Check if the speedometer pointer is shaking and the abnormal noise sounds.
3. Eliminate the hysteresis by tapping the speedometer.


Description	(VIN = 13.5 ± 0.1V, Temperature: 25°C)										
Standard speed (Km/h)	20	40	(60)	80	100	120	140	(160)	(180)	200	220
Tolerance (Km/h)	+4	+4	+7	+9	+10.5	+12.5	+14.5	+16	+18	+18	-
	0	0	+2.5	+3.5	+4	+6	+7.5	+8.5	+10	+10	-

Modification basis	
Application basis	
Affected VIN	

CLUSTER

undefined



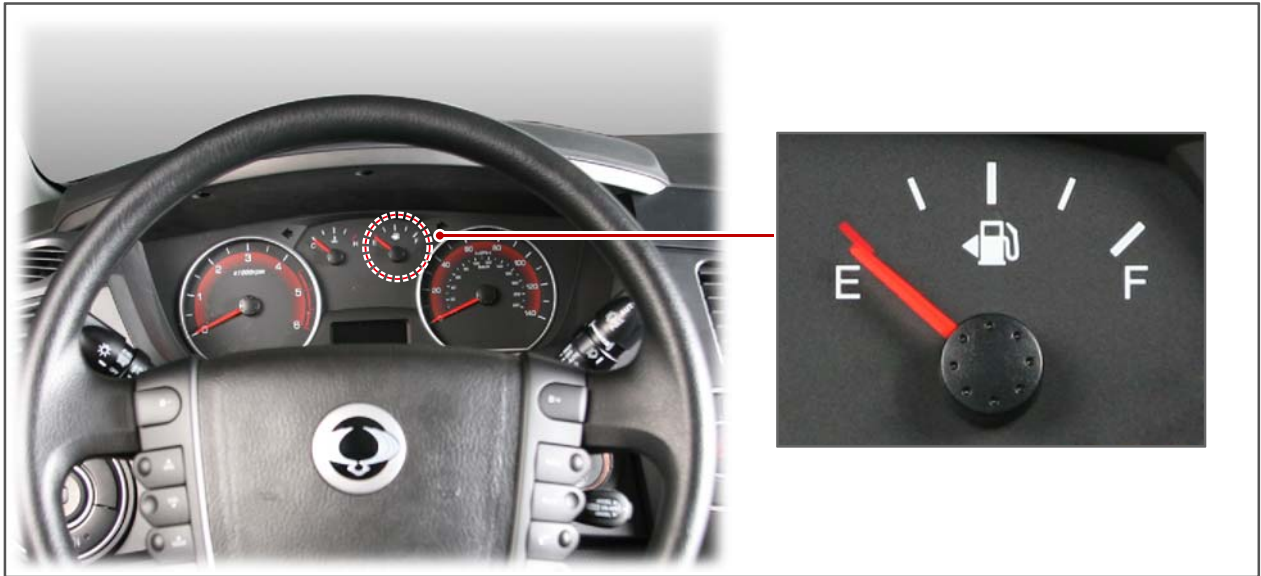
**CAUTION**
The allowable tolerance increases when the tires are worn or the tire pressure is out of specified range.

شرکت دیجیتال خودرو (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

Modification basis	
Application basis	
Affected VIN	

3) Fuel Level Gauge



The fuel level gauge displays the resistance value of the float on the fuel sender in the fuel tank through a pointer. Note that this vehicle doesn't have a service hole for checking the fuel sender connector in the fuel tank.

The fuel sender and its connector can be checked and replaced only when the fuel tank is removed. The power supply and resistance value should be measured at the connector in front of the fuel sender (refer to wiring diagram).

When the power supply and output resistance are normal, the float operation by fuel level may be defective; if so, replace the fuel sender.

Item	Tolerance and resistance value by indicating angle (VIN = 13.5 ± 0.1 V, temperature: 25°C)								
	Full	Full (Gauge)	(3/4)	1/2	(1/4)	LFW		Empty (Gauge)	Empty
						GSL	DSL		
Indicating angle (°)	-	90	67.5	45	22.5	3.0	3.0	0	-
Tolerance (°)	-	+4, 0	-	±5	-	-	-	0, -4	-
Resistance (Ω)	38	43	67	99.5	150	260	268	276.3	283
Fuel (Liter)	75	73	56	39	22	11.5	9.0	5	4



CAUTION

This table shows the tolerance and resistance value changes by fuel level in normal conditions. Therefore, the differences that can be occurred by the road conditions and fuel fluctuations are ignored.

Low fuel warning lamp comes on when:

The fuel level drops to 9 L or less. The lamp goes off if the fuel level reaches 9.5 L or more.

Modification basis	
Application basis	
Affected VIN	

CLUSTER

undefined

4) Coolant Temperature Gauge



The coolant temperature gauge displays the coolant temperature with a pointer. The angle of pointer that changes by coolant temperature is as shown below.

Item		Tolerance and resistance value by indicating angle				
Coolant temperature	Less than 40°C	DSL	GSL	110°C	120°C	Over 125°C
		70°C	80°C			
Indicating angle (°)	-	43			90	-
Tolerance	+0°C	0°C			-	+4°C
	-4°C	-4°C				+0°C

Measurement of coolant temperature sensor resistance

Measure the resistance between the terminal and the ground with an ohmmeter and replace if the resistance is out of specified range.

Temperature (°C)	20	60	80	100	120
Resistance (Ω)	2449Ω ± 5%	589.4kΩ ± 5%	321Ω ± 5%	185.7kΩ ± 5%	112.9kΩ ± 5%
Voltage (V)	3.615	1.910	1.259	0.819	0.536

⚠ CAUTION

When the resistance value by coolant temperature is within the specified range, check thermostat, water pump, radiator related coolant circuit for normal operation. Also, check the wiring harnesses and connectors for proper connection.

5) Description for LCD Display



► Mode Description



Change Order	Mode	LCD Display	Description
1	TRIP A		The maximum distance value that can be displayed is 999.9 km with increments of 0.1 km. The trip meter is reset to 0.0 km when the value reaches above 999.9 km. When measuring a trip distance, reset the distance value in the mode you want to use by pressing the TRIP switch for 1 sec. or more.
2	TRIP B		The maximum distance value that can be displayed is 6,213.09 mi with increments of 0.62mi. The trip meter is reset to 0.0 km when the value reaches above 999.9 km. When measuring a trip distance, reset the distance value in the mode you want to use by pressing the TRIP switch for 1 sec. or more.
3	Distance to empty		The estimated distance that can be traveled is calculated based on the current fuel level. If the DTE is less than 50 km, "----" flashes on the display.
4	Driving time		The driving time from resetting the value (0:00) until now is displayed. The value displayed is accumulated while the engine is running even if the vehicle is not driven. The display range is 00:00 to 99:59. When measuring the driving time, press the TRIP switch for 1 sec. or more to reset the value.
5	Average fuel economy		The average fuel economy from resetting the value (--.) until now is displayed. The value displayed is accumulated while the engine is running even if the vehicle is not driven. The display range is 0.0 to 99.9 km/h. When measuring the average fuel economy, press the TRIP switch for 1 sec. or more to reset the value. "--." is displayed on the screen when resetting. The value is reset automatically whenever the vehicle is fuelled.

Modification basis	
Application basis	
Affected VIN	

CLUSTER

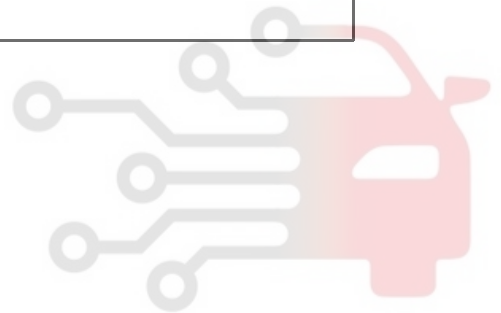
undefined

05-16 8210-01

Change Order	Mode	LCD Display	Description
6	Instant fuel consumption		The fuel range is calculated based on the distance driven and fuel consumed every 2 seconds. If the vehicle speed is below 10 km/h or the engine rpm is 200 rpm or less, the instant fuel economy is not displayed. The display range is 0.0 to 99.9 km/.
7	Brightness adjustment		The brightness of the illumination can be adjusted in 6 steps by pressing the TRIP switch briefly (less than 1 sec.). The display is changed from ILL1 to ILL6 every time the switch is pressed. If you select one level within the range and press and hold the TRIP switch, the brightness level is memorized. If there is no TRIP switch input for 5 seconds or more, the mode is switched to TRIP A mode automatically. When the battery is reinstalled, the brightness level is reset to level 4.

دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

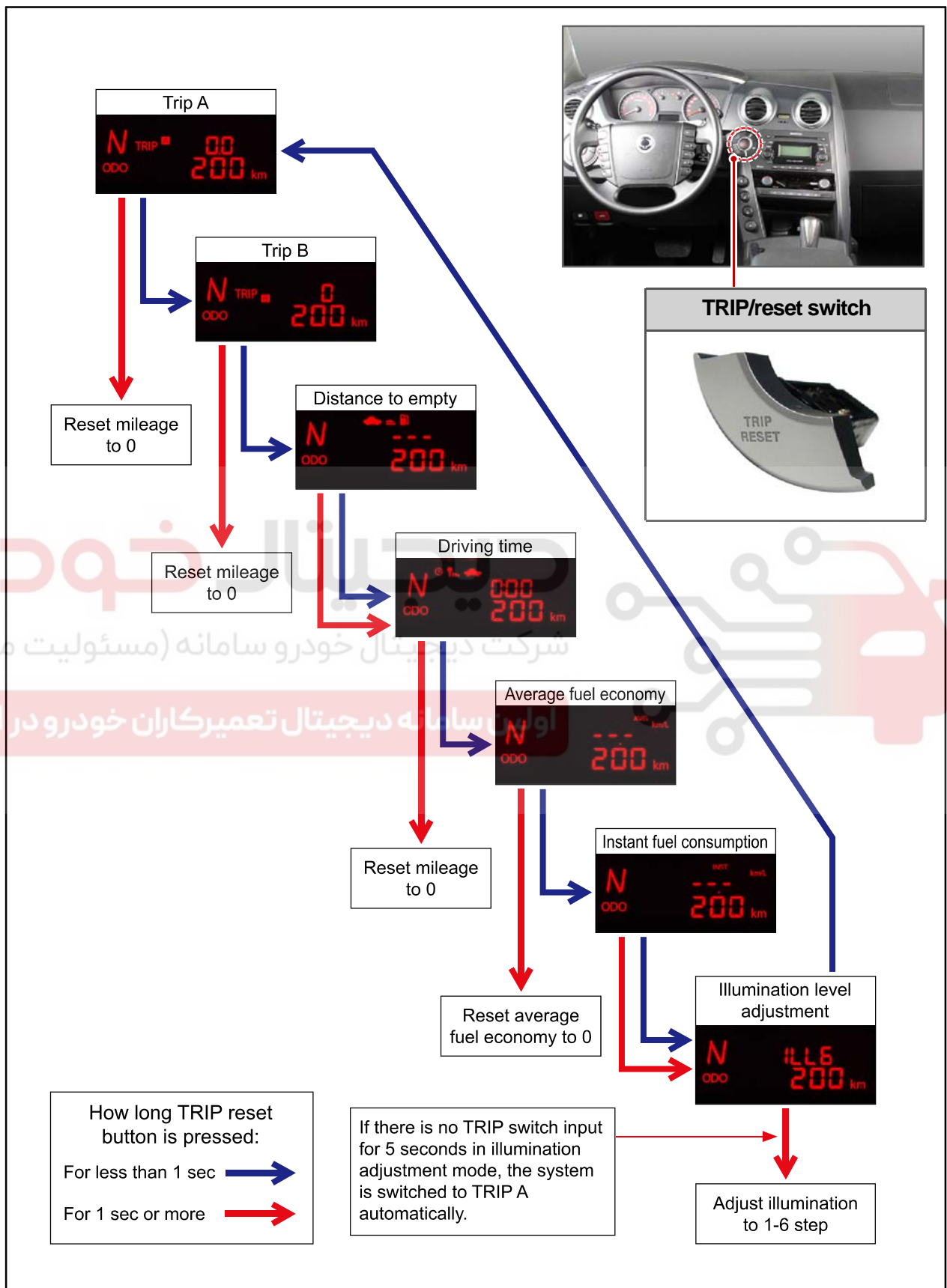


CLUSTER

undefined

Modification basis	
Application basis	
Affected VIN	

► Shifting Mode



Modification basis	
Application basis	
Affected VIN	

CLUSTER

undefined

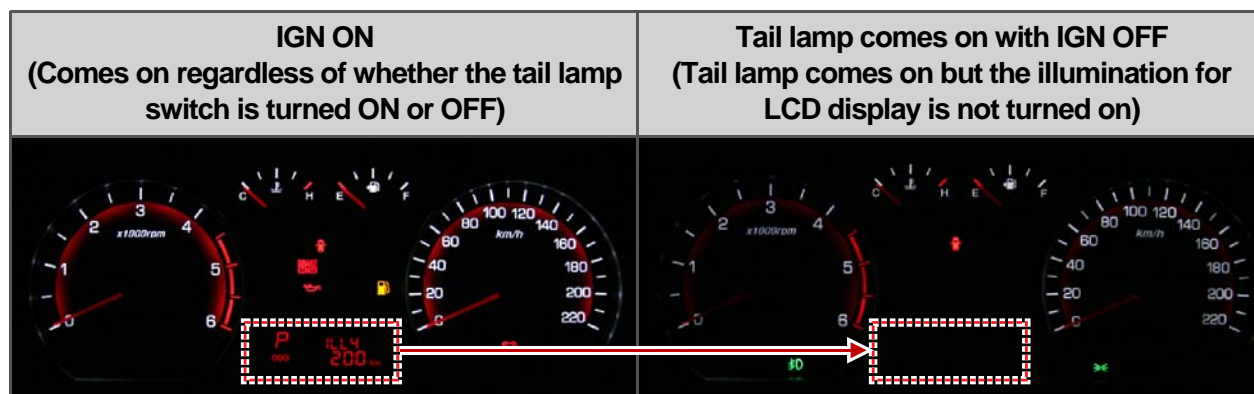
05-18 8210-01

► Brightness of LCD display when turning ON/OFF tail lamp

Sequence	Level	Tail lamp OFF		Tail lamp ON	
		Display brightness	Brightness ratio	Display brightness	Brightness ratio
1	ILL1		25%		5%
2	ILL2		40%		9% (LCD: 12%)
3	ILL3		55%		13% (LCD: 19%)
4	ILL4		70%		17% (LCD: 26%)
5	ILL5		85%		21% (LCD: 33%)
6	ILL6		100%		25% (LCD: 40%)

► Illumination conditions of LCD display when turning ON/OFF tail lamp

The illumination for the LCD display comes on when turning on the tail lamp and is adjustable only when the ignition is ON. When turning on the tail lamp switch with the ignition OFF, the tail lamp comes on but the LCD display is not illuminated. Refer to the illustration below.



CLUSTER

undefined

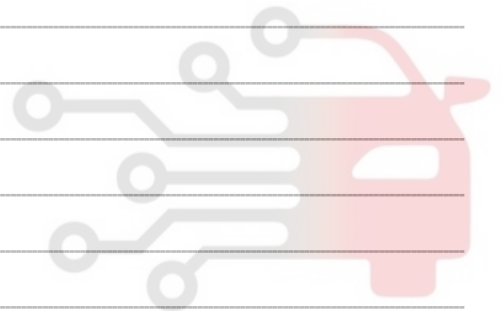
Modification basis	
Application basis	
Affected VIN	

Memo

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



3. WARNING LIGHTS AND INDICATORS

Seat belt warning lamp

The seat belt warning light comes on and the seat belt warning chime sounds for 6 seconds when the ignition switch is turned to "ON" position unless the driver's seat belt is securely fastened. This reminding operation stops when the driver fastens the seat belt.

Brake warning light

This warning light comes on and warning buzzer sounds when the parking brake is applied and/or the brake fluid level is lower than specified level.

Door ajar warning light

This light comes on when a door or tailgate is either opened or not closed completely.

ESP OFF Indicator

This lamp comes on when pressing the "ESP OFF" switch or the ESP system is defective. When the ESP system is activated, this lamp blinks and a chime sounds.

HDC Indicator

This indicator comes on or blinks according to HDC operations.

Immobilizer Indicator

This indicator comes on when the ignition key is communicating with the engine control unit for approx. 0.5 seconds.

Glow Indicator

When the ignition key is turned ON, this indicator lamp comes on and the combustion chamber is warmed up. In the vehicle equipped with direct injection type engine, this indicator may come on very shortly or may not come on.

Fog Lamp / Headlamp High Beam Indicator

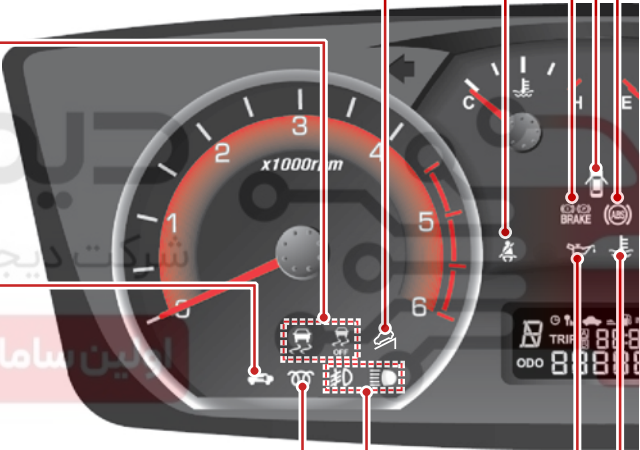
This lamp comes on when the fog lamp or high beam headlamp operates to indicate the operating status.

Engine Oil Pressure Warning Light

This lamp comes on if there is any fault in the engine oil system and goes off when a certain amount of time has elapsed after turning ON the ignition switch.

Engine Coolant Overheat Warning Light

When the coolant temperature is abnormally hot (over 120℃), this warning light blinks and a warning buzzer sounds at 1 Hz. (check cooling system)



The diagram shows a vehicle's instrument cluster with various gauges and indicators. Red lines connect the text boxes to their corresponding locations on the cluster: Seat belt warning lamp (top left), Brake warning light (top center), Door ajar warning light (top right), ESP OFF Indicator (middle left), HDC Indicator (middle center), Immobilizer Indicator (middle left, below ESP), Glow Indicator (middle left, below Immobilizer), Fog Lamp / Headlamp High Beam Indicator (bottom left), Engine Oil Pressure Warning Light (bottom center), and Engine Coolant Overheat Warning Light (bottom right).

ABS Warning Light

This warning light comes on when the ignition switch is turned to "ON" position and should go out if the system is normal. The vehicle with ABS performs self-diagnosis. During this diagnosis, brake pedal vibration and noise may be apparent when the driving motors discharges the hydraulic pressure from the internal hydraulic device.

Low Fuel Level Warnig Light

This warning light comes on when the fuel will soon be exhausted. The time it takes turn on, however, varies according to the gradient of the vehicle.

4WD Indicator

- 4WD HIGH Indicator

- The lamp blinks momentarily during the change of driving mode.

- 4WD LOW Indicator

The lamp blinks momentarily during the change of driving mode.

4WD CHECK Warning Light

This indicates that there is something wrong in the transfer case system. (check the system)

Water Separator Warning Light

This lamp comes on to warn the driver of water in the fuel tank which causes the loss of engine power. When a certain amount of water is accumulated, the lamp comes on and a chime sounds.

Charge Warning Light

This warning light comes on when the ignition switch is turned on and go off when the engine is started. If this light doesn't go off after engine starting, it means there is a malfunction in the system.

Engine Hood Open Warning Light

When the engine hood is open, this light comes on to inform the driver.

Engine CHECK Warning Light

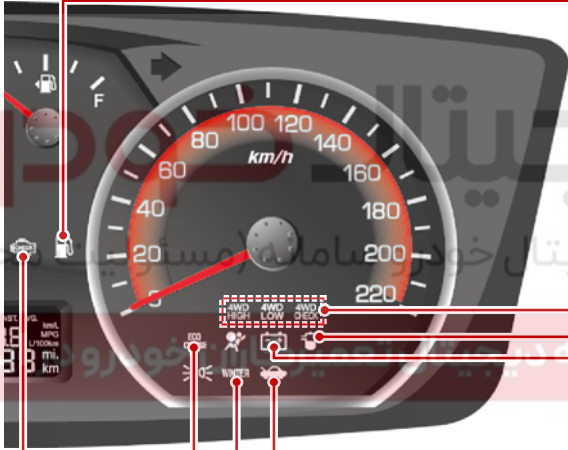
This warning light comes on when the ignition switch is turned to "ON" position and should go out if the system related to engine control is normal. This comes on when different sensors and devices related to engine control are defective.

Auto Cruise Control Indicator

Operating the cruise control switch turns on the indicator lamp to indicate the cruise control system is activated.

Winter Mode Indicator

Pressing the "W" side of the automatic transmission mode selector switch switches the driving mode to winter mode and turns on the indicator lamp. Use this mode to drive off smoothly on icy and slippery roads.



The diagram shows a vehicle's instrument cluster with various gauges and warning lights. Red lines connect the following components to their respective descriptions:

- ABS Warning Light:** A small light with an exclamation mark inside a circle, located on the left side of the cluster.
- Low Fuel Level Warnig Light:** A light with a fuel pump icon, located on the right side of the cluster.
- 4WD Indicator:** A light with a 4x4 vehicle icon, located on the right side of the cluster.
- Water Separator Warning Light:** A light with a water drop icon, located on the right side of the cluster.
- Charge Warning Light:** A light with a battery icon, located on the right side of the cluster.
- Engine Hood Open Warning Light:** A light with a hood icon, located on the right side of the cluster.
- Engine CHECK Warning Light:** A light with an exclamation mark inside a circle, located on the right side of the cluster.
- Auto Cruise Control Indicator:** A light with a car icon and a line through it, located on the right side of the cluster.
- Winter Mode Indicator:** A light with a snowflake icon, located on the right side of the cluster.

Modification basis	
Application basis	
Affected VIN	

CLUSTER



undefined

WWW.DIGITALKHODRO.COM

021 62 99 92 92

(1) Operation of HDC Indicator Controller

This table describes the coming-on and blinking mode of HDC indicator according to the HDC switch operation (ON/OFF). The HDC indicator on the instrument panel has two modes; green (function lamp) and red (warning lamp). The HDC switch is a push & self return type switch ? When you press it once, it starts to operate and when you press it again, it stops the operation.

HDC Operation Mode		HDC indicator	HDC warning lamp
		Green	Red
			
Initial ignition ON (From hence, this signifies operation mode after the engine starts. Even when HDC switch is ON, if the ignition is OFF, HDC operation stops automatically.)		OFF	ON
Not available	HDC switch OFF	OFF	OFF
	HDC system error	OFF	ON
Stand-by	HDC switch ON	ON	OFF
	The HDC switch is turned ON, but HDC system is in stand-by mode because the operating requirements are not met.		
In operation	HDC system is operating.	Blinking (0.5 seconds of interval)	OFF
	The HDC switch is turned ON, and the operating requirements are met. HDC is operating with operating sound.		
System overheat	High brake system temperature (over 350°C)	HDC stand-by mode	OFF
		HDC is operating	Alternate blinking of green and red lamp (0.5 seconds of interval)
	Too high brake system temperature (over 450°C)	OFF	ON
	There is no specific temperature sensor in the system, but a programmed logic inside the HECU predicts the temperature based on the operating numbers and conditions of HDC (HDC cannot be operated).		

CAUTION

- Basically, the brake system's basic functions can work even when there are problems with the HDC system. As given in the table above, the HDC warning lamp comes on when:

Initial ignition ON

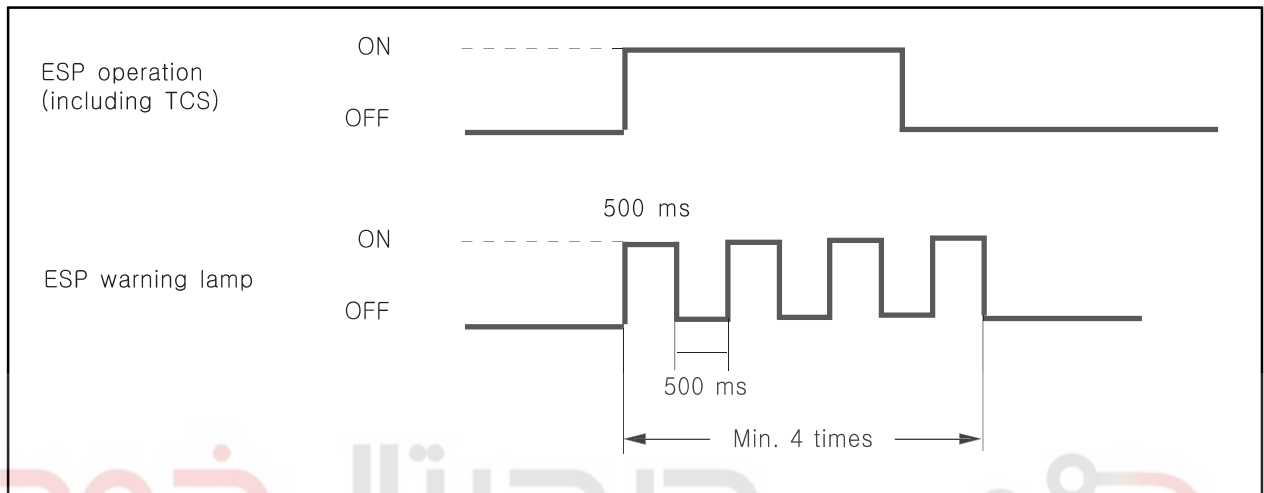
HDC system error occurs

Brake system overheat

(2) ESP Warning Lamp

► ESP Warning Lamp Blinking in Control

ESP warning lamp blinks when ESP control is activated. If the activation reaches a certain limitation, a beep sounds to warn the driver. The ESP warning lamp goes off when ESP function is deactivated. Even when the ESP is operated for a very short period of time, the ESP warning lamp blinks minimum of 4 times every 500 milliseconds.



1. When receiving CAN data

LAMP: (200h, 1.5) ESP - INFO - BL: when receiving data, 500 ms on/off

BUZZER: (200h, 1.4) ESP - INFO - BUZZ: when receiving data, 100 ms on/off

► ESP System Cancellation Using the ESP OFF Switch

When the ESP switch is pressed (for over approximately 150 ms), the ESP system will be cancelled and the vehicle will be driven regardless of the output values from the corresponding sensors. Then, the ESP warning lamp on the instrument panel comes on.

The detailed operation procedures are as follows:

1. The ESP warning lamp comes on when the ESP OFF switch is pressed for over 150 ms.
2. The switch returns to normal position when the OFF switch is released.
3. The ESP system will be cancelled after approximately 150 ms.

Based on the above procedures, we can see that the ESP system will be cancelled after a certain period (approx. 150 ms) from releasing the switch to the original position. The ESP system does not get canceled immediately when the ESP warning lamp is turned on by pressing the ESP OFF switch.

When you turn the ESP system off by pressing the ESP switch for over 150 ms, the TCS system is turned off. And the basic ABS system will operate.

Modification basis	
Application basis	
Affected VIN	

CLUSTER

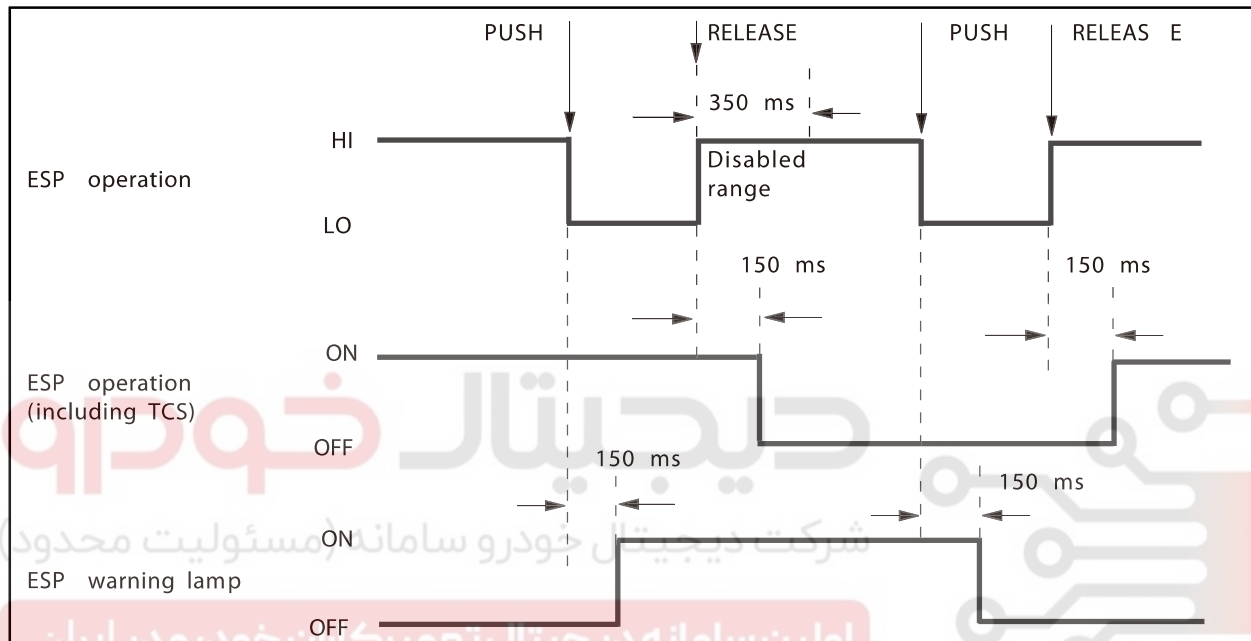
undefined

► Resuming the ESP System by Using the ESP OFF Switch

The ESP system will be resumed and the ESP warning lamp at the instrument panel goes off when the ESP switch at the center switch panel is pushed (for over approximately 150 ms) while the ESP system is not operating.

The detailed operation procedures are as follows.

1. The ESP warning lamp comes on when the ESP OFF switch is pushed for over 150 ms.
2. The switch returns to normal position when the OFF switch is released.
3. The ESP system will be resumed after approx. 150 ms.

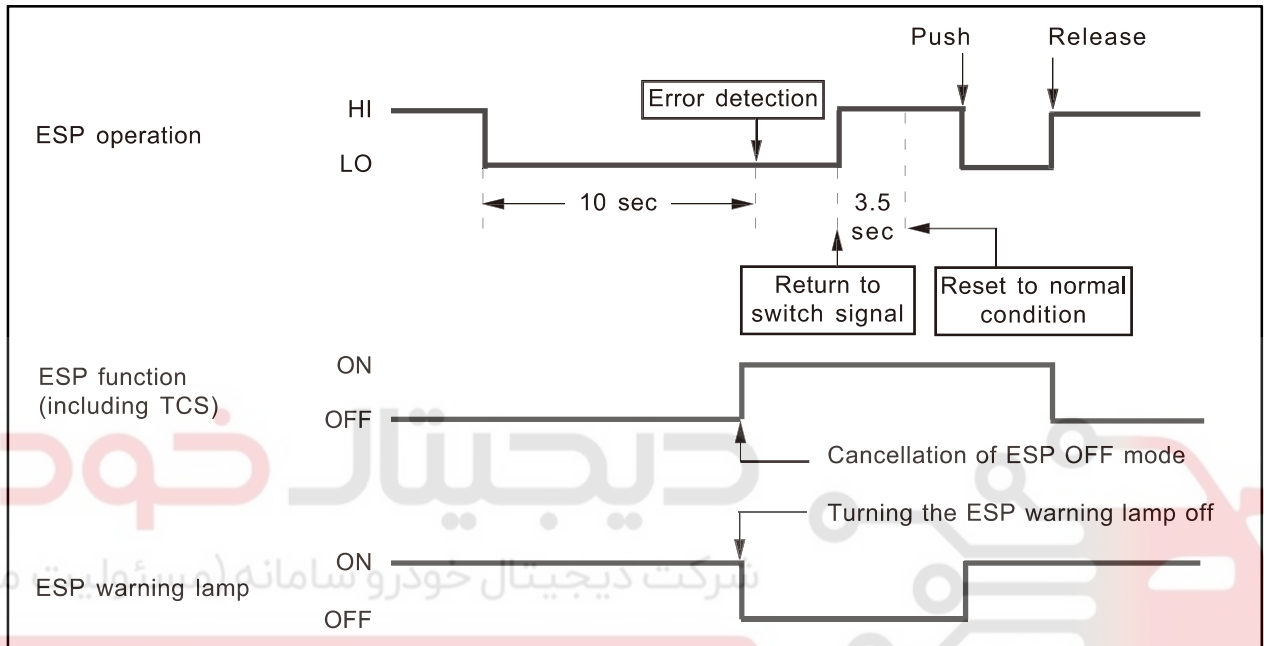


⚠ CAUTION

- When turning the ignition switch off while the ESP system is activated, the ESP system will be resumed when ignition switch is turned on again.
- When the vehicle is controlled by ESP system during driving, the ESP OFF switch does not operate.
- The ESP OFF switch operates when it is pushed for over 150 ms. When it is pushed for less than 150 ms, the ESP OFF mode and the ESP warning lamp will not be changed.
- When the ESP OFF switch is pushed within 350 ms of being turned off, the ESP warning lamp and ESP system will not be turned on.

► ESP OFF Switch Monitoring

When the ESP unit recognizes that the ESP OFF switch is pushed for over 10 seconds, the ESP unit determines it as a ESP OFF switch malfunction. When the ESP OFF switch is pushed, the ESP system is resumed after 10 seconds. However, the ESP warning lamp comes on when the ESP OFF switch is pushed (for over 150 ms) and then goes out when the ESP system is resumed. When the ESP OFF switch returns to normal position, the ESP unit resets the ESP OFF switch for approx. 3.5 seconds.



Modification basis	
Application basis	
Affected VIN	

CLUSTER

undefined

05-26 8210-01

► ESP Warning Lamp Operation Depending on System Conditions

The table shows ESP warning lamp operations when the ESP system is defective or ESP (including TCS function) is working.

	Warning Lamp		Controls			
	ABS W/L	ESP W/L	ABS	ASR	ABD	Vehicle yaw control
Initial start (for 1.8 sec)	ON	ON	NO	NO	NO	NO
Normal mode	OFF	BLINKS WHEN ESP OPERATION	OK	OK	OK	OK
ESP fault	OFF	ON	OK	NO	NO	NO
ABS fault	ON	ON	NO	NO	NO	NO
System fault	ON	ON	NO	NO	NO	NO
Low batt. voltage	ON	ON	NO	NO	NO	NO
High battery voltage	ON	ON	NO	NO	NO	NO
High brake pad temp	OFF	ON	OK	NO	NO	NO
ESP-OFF mode	OFF	ON	OK	NO	NO	OK ^{Note 1)}
Entering diag. mode	ON	ON	NO	NO	NO	NO

⚠ CAUTION

- When the driver presses the brake pedal during the ESP OFF mode, the yaw control is performed to compensate the vehicle stability (posture) during ESP operation.

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

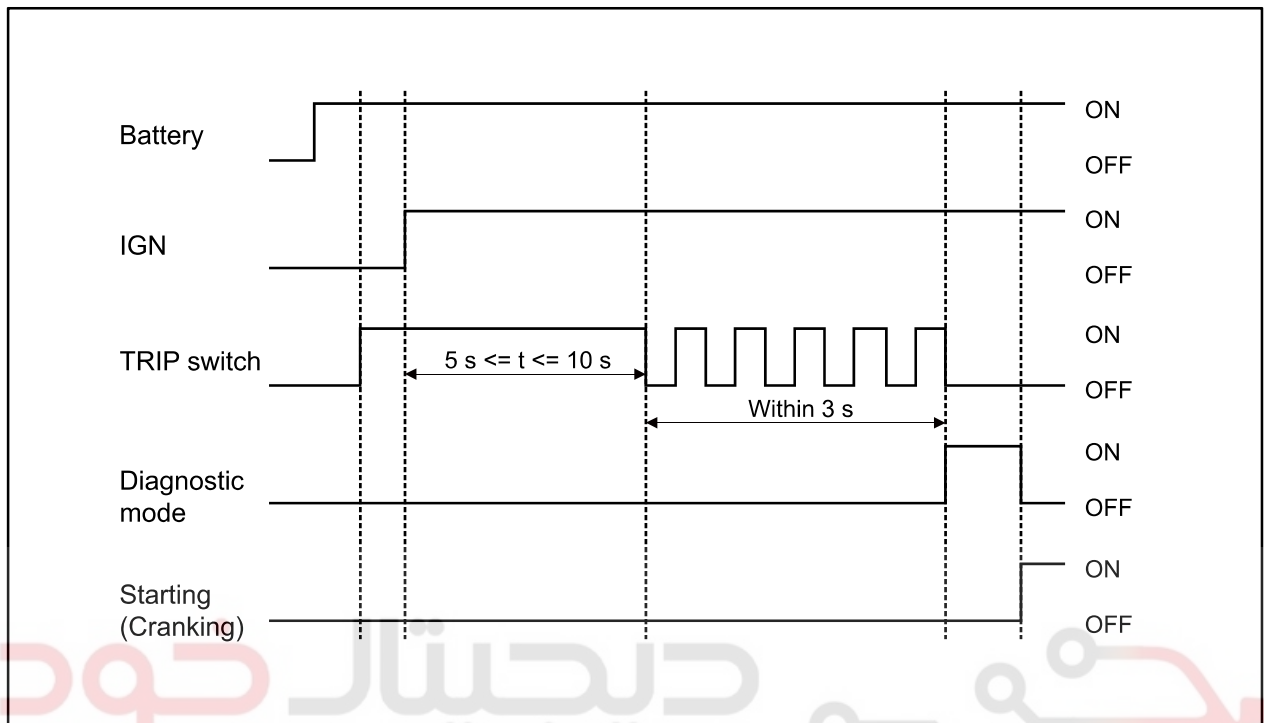
CLUSTER

undefined

Modification basis	
Application basis	
Affected VIN	

4. SELF-DIAGNOSIS CHECK

► How to enter self-diagnosis mode



1. Turn the ignition ON with the TRIP switch pressed.
2. Press and hold the TRIP switch for 5 to 10 sec. with the ignition ON.
3. Press and hold the TRIP switch for less than 10 sec. and then cycle the switch between ON and OFF 5 times within 3 sec.
4. Confirm that the self-diagnosis mode is activated through the instrument cluster.

► Self-diagnosis OFF

If the engine speed increases to 396 rpm or more while the engine is cranking or the ignition key is turned OFF in self-diagnosis mode, the self-diagnosis mode is turned OFF automatically.

► Operating process

1. Speed gauge: changes from 0 to 220 km
2. RPM gauge: changes from 0 to 6,000 rpm
3. Fuel gauge: changes from E to F
4. Temperature gauge: changes from C to H
5. Warning/Indicator lamps: All indicator/warning lamps controlled by MICOM are turned ON.
6. Dimming: Illuminates at the highest lighting level.
7. LCD display: All elements are activated.

Modification basis	
Application basis	
Affected VIN	

CLUSTER

undefined

05-28 8210-01

5. BUZZER OUTPUT SPEC

No.	GCC	GCC beside	Buzzer		Priority	Remark
			ON time	OFF time		
RPAS buzzer output	O	O	75ms	650ms	1	650ms delay and then 75ms sound
Over speed warning	O	X	500ms	200ms	2	
ESP buzzer output	O	O	100ms	100ms	3	
Temp buzzer output	O	O	500ms	500ms	4	
Fuel filter	O	O	500ms	500ms	5	WKS_KL= In & NMOT > 400 & IGN ON -> lamp on for 6sec

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



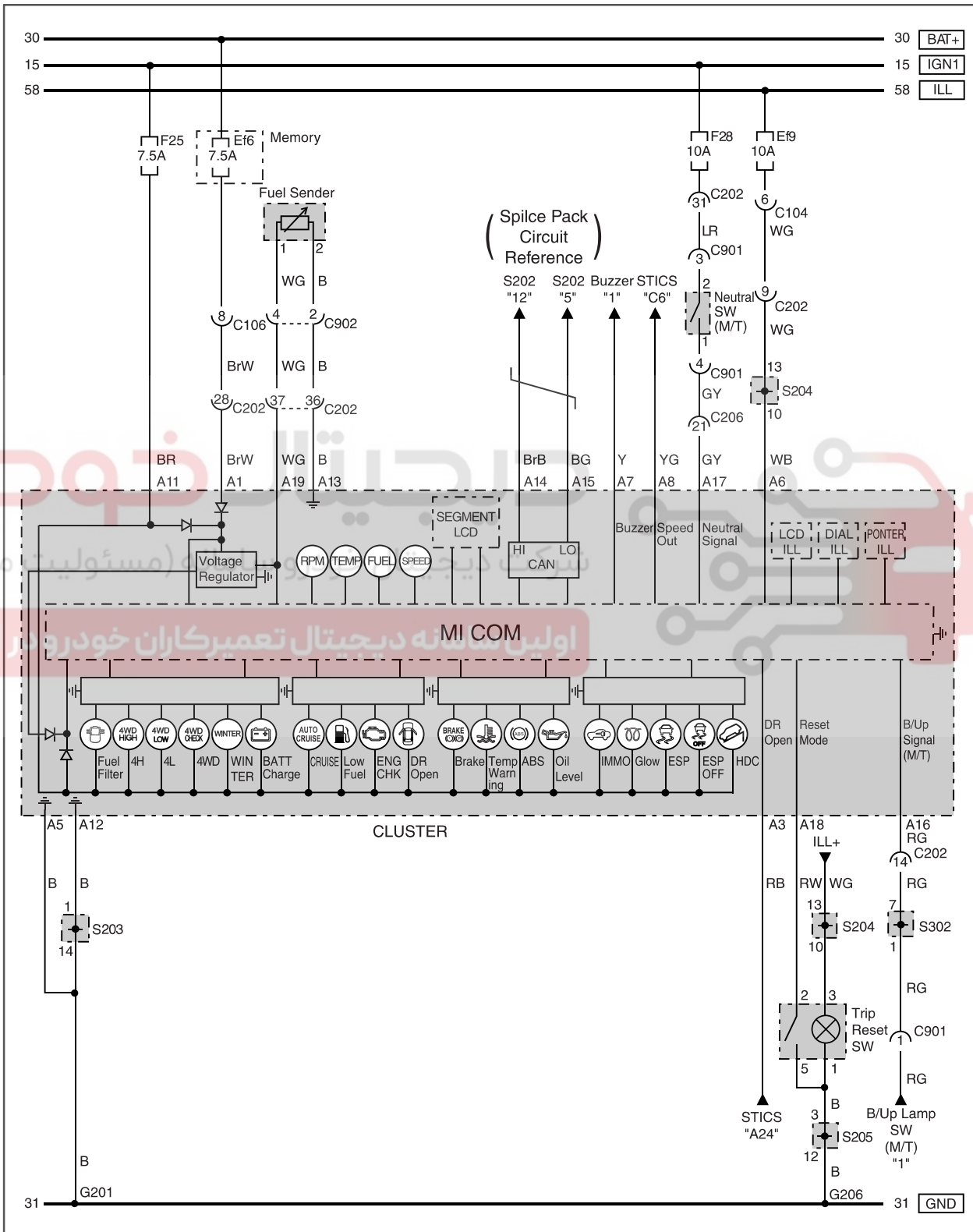
CLUSTER

undefined

Modification basis	
Application basis	
Affected VIN	

6. CIRCUIT DIAGRAM

1) Gauge (Speed, RPM, Fuel, Temp), Warning Lamp (Fuel, Fuel Filter, ABS, Brake, 4WD)

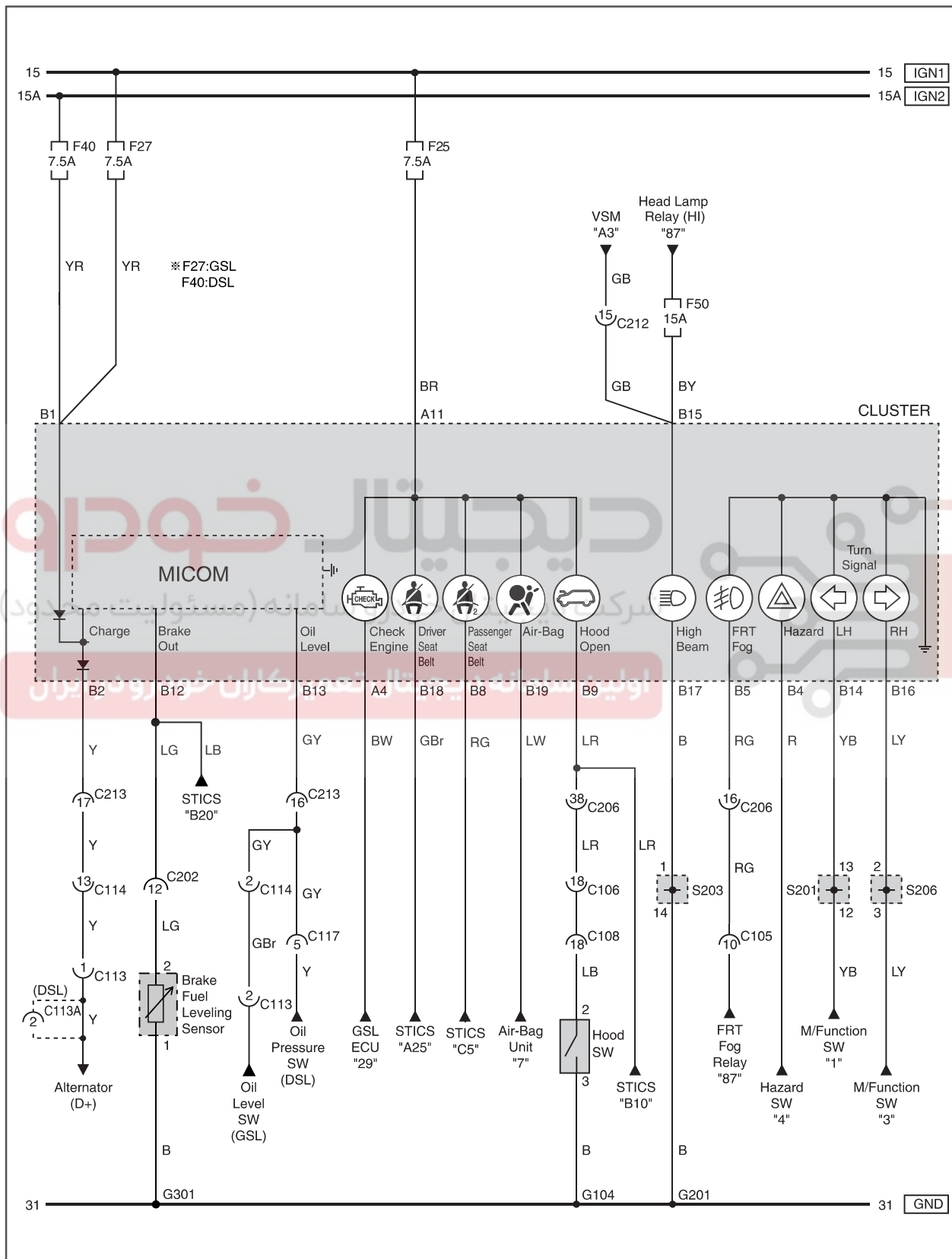


Modification basis	
Application basis	
Affected VIN	

CLUSTER

undefined

2) Warning Lamp (BATT Charge, Oil, Hood, Door, ENG Check, Air Bag, Seat Belt), Turn Signal, Fog Lamp, Hazard



CLUSTER

undefined

Modification basis	
Application basis	
Affected VIN	

REMOVAL AND INSTALLATION

S.G.N.

8210-01 CLUSTER

Preceding work - Disconnect the negative battery cable.

Front view



Rear view



Modification basis	
Application basis	
Affected VIN	

CLUSTER

undefined

ELECTRI
CFUSE
AND

STICS

IMMOBIL
ZER

CLUSTER

LAMP

SWITCH

WIPER &
WASHERRAIN
SENSOR

PAS

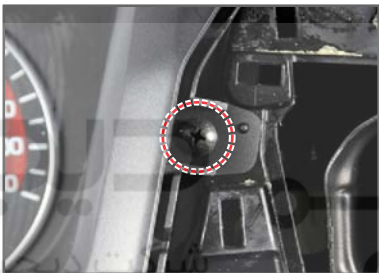
AUDIO
SYSTEM



1. Carefully pull off the lower part of the center fascia panel (Refer to "Body" section).



2. Remove four instrument panel mounting screws.



3. Disconnect the outside mirror switch bezel connector and remove the meter cluster panel assembly.



CAUTION

- Be careful not to damage the another components during removal procedures.

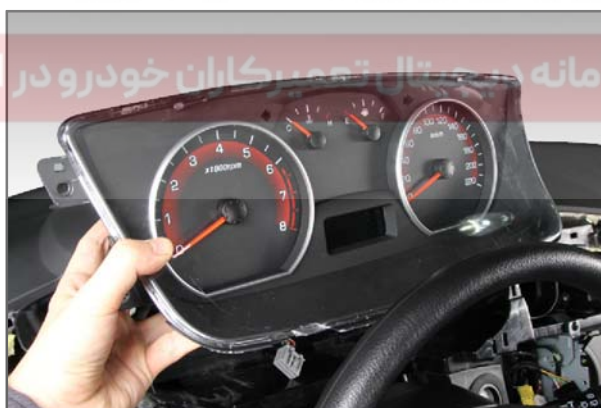
Modification basis	
Application basis	
Affected VIN	



41. Unscrew four cluster mounting screws.



5. Remove the two cluster connectors.



6. Remove the instrument cluster housing.



7. Installation is in the reverse order of removal.

Modification basis	
Application basis	
Affected VIN	

CLUSTER
undefined

Memo

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

