

PAS**8790-03****INDEX****PAS****GENERAL**

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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



PAS**8790-03****GENERAL****1. COMPONENT SPECIFICATIONS**

The parking aid system emits the supersonic wave signals from the sensors on the rear bumper with a specific interval and detects the reflected signals from obstacles while the gear selector lever is in "R" position. The alarm interval increases as the obstacle approaches. This supplementary system is to secure the safety distance for parking.

Descriptions		Value	Descriptions		Value
Rated voltage		DC 12 V	Operating temperature		-30°C ~ +80°C
Operating voltage		DC 9 V ~ 16 V	Storage temperature		-40°C ~ +85°C
Current consumption	Unit	Below 100 mA	Relative humidity		95% RH max
	Sensor	Below 20 mA (each)	Weight	Unit	160g ± 10g max
Sensor insulating resistance		Over 5 M W		Sensor	70g ± 10g max

**1) Parking Aid Unit**

Detecting type: Super sonic wave
 Detecting distance: 25 cm ~ 120 cm (distance between sensor and obstacle)

**2) Parking Aid Sensor**

1. Type: Piezo ceramic element
2. Frequency: 40 KHz ± 2 KHz
3. Detecting range (13.5 V)
 - Horizontal: Min. 20° at 110 ± 5 cm Min. 100° at 50 ± 5 cm
 - Vertical: Min. 20° at 110 ± 5 cm Min. 60° at 50 ± 5 cm

CAUTION

- There is no upper mounting cover and spring in the PAS sensor installed in this vehicle.

Modification basis	
Application basis	
Affected VIN	

PAS
undefined

2. CAUTIONS ON PARKING AID SYSTEM

CAUTION

- Note that the display does not show everything in the rear area. Always check nobody, especially animals and children, is behind the vehicle when parking or reversing.
- If you can not properly check the vehicle behind, get out of the vehicle and then visually check it.

1. The parking aid system is just a supplemental device to help your parking operation.
2. Always keep the safety precautions.
3. Do not press or shock the sensors by hitting or high-pressure water gun while washing, or the sensors will be damaged.
4. If the system is in normal operating condition, a short beep sounds when the gear selector lever is moved into "R" position with the ignition key "ON".
5. If the system is in abnormal operating condition, a beep sounds for 3 seconds when the gear selector lever is moved into "R" position with the ignition key "ON" or engine running. However, it is also occurred when the obstacle is within 50 cm from the rear bumper.

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Modification basis	
Application basis	
Affected VIN	

► **The parking aid system will not work or improperly work under following cases**

1. Certain obstacles that sensors can not detect
 - Wires, ropes, chains.
 - Cotton, sponge, clothes, snow that absorb ultrasonic waves.
 - Obstacles lower than the bumper (ex. drain ditch or mud puddle)
2. Not defective but improperly working
 - When the sensing portion is frozen (operates normally after thawed)
 - When the sensing portion is covered by rain, water drops, snow or mud (operates normally after cleaned)
 - When receiving other ultrasonic signals (metal sound or air braking noises from heavy commercial vehicles)
 - When a high-power radio is turned on
3. Narrowed sensing area
 - When the sensing portion is partially covered by snow or mud (operates normally after cleaned)
Surrounding temperature of sensor is too high (approx. over 80°C) or too low (approx. below -30°C)
4. Not defective but may occur improper working
 - When driving on the rough roads, gravel road, hill and grass
 - When the bumper height is changed due to the heavy load
 - When the sensing portion is frozen
 - When the sensing portion is covered by rain, water drops, snow or mud
 - When receiving other ultrasonic signals (metal sound or air braking noises from heavy commercial vehicles)
 - When a high-power radio is turned on
 - When some accessories are attached in detecting ranges

ELECTRI
CFUSE
AND

STICS

IMMOBILI
ZERCLUSTE
R

LAMP

SWITCH

WIPER &
WASHERRAIN
SENSOR

PAS

AUDIO
SYSTEM

Modification basis	
Application basis	
Affected VIN	

PAS
undefined

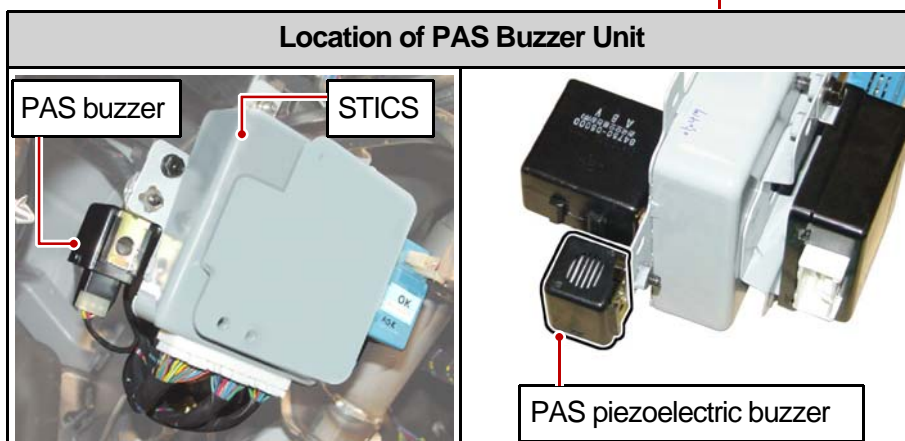
OVERVIEW AND OPERATION PROCESS

1. SYSTEM OVERVIEW

The parking aid device is integrated in the rear bumper and it uses three Piezoelectric elements to measure vertical and horizontal distance to obstacles.

When placing the gear selector lever to "R" position, the designated unit (PAS unit in the rear right quarter panel) activates the parking aid sensors to measure the distance to obstacles.

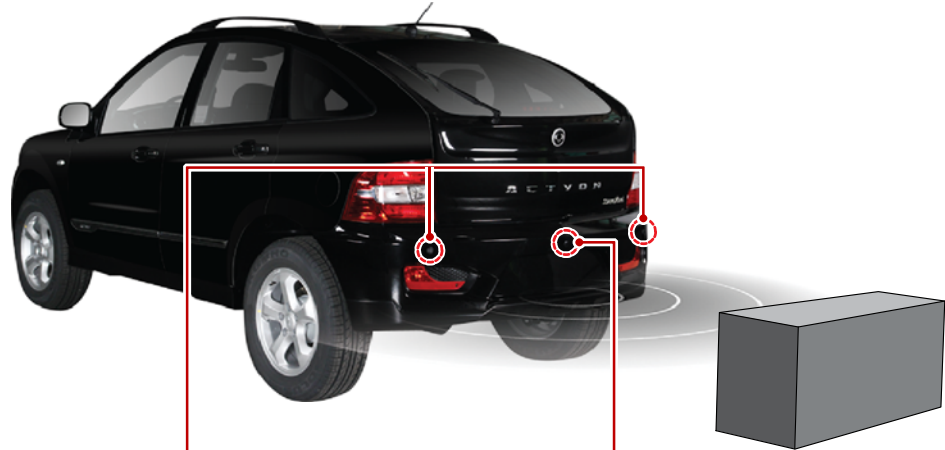
► PAS Related Devices



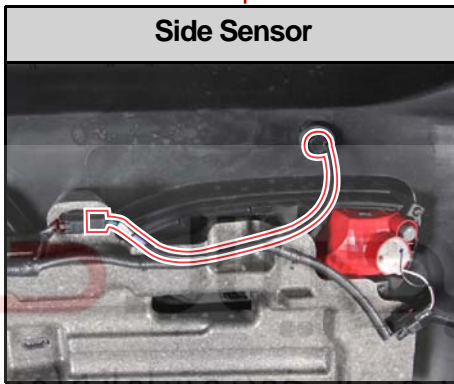
PAS
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Modification basis	
Application basis	
Affected VIN	

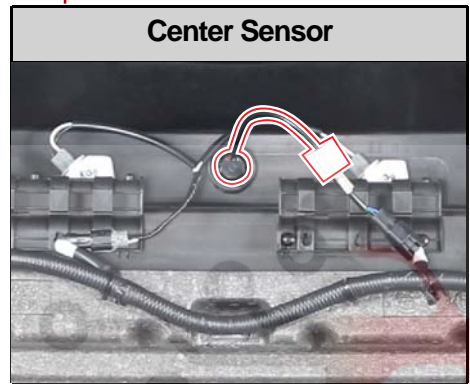
Left/Right/Center Sensor Location



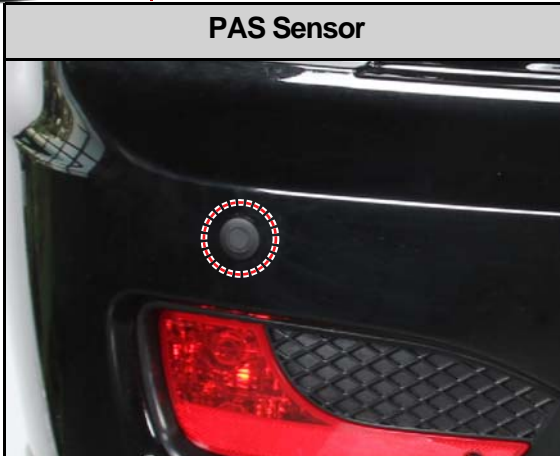
Side Sensor



Center Sensor



PAS Sensor



Parking Aid Unit



- ELECTRIC
- FUSE AND
- STICS
- IMMOBILIZER
- CLUSTER
- LAMP
- SWITCH
- WIPER & WASHER
- RAIN SENSOR
- PAS
- AUDIO SYSTEM

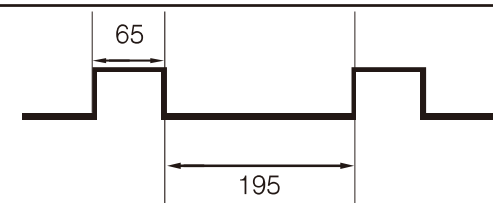
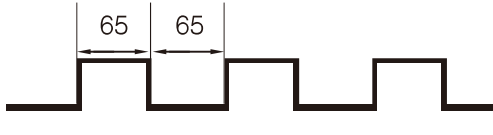

Modification basis	
Application basis	
Affected VIN	

PAS
undefined

2. ALARM INTERVAL

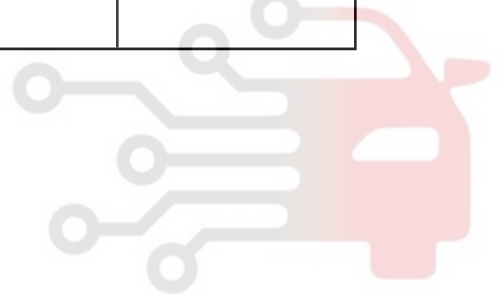
Alarm interval and display changes according to the distance as below:

While reversing, if obstacles are within stage 1, the warning beep sounds with long intervals. If within stage 2, the warning beep sounds with short intervals and if within stage 3, the warning beep sounds continuously.

Stage	L, C, R Sensor	Interval (msec)	Remark
1	81 ~ 120 cm		"Beep — "
2	51 ~ 80 cm		"Beep -, Beep -, Beep -"
3	25 ~ 50 cm		"Beep — "

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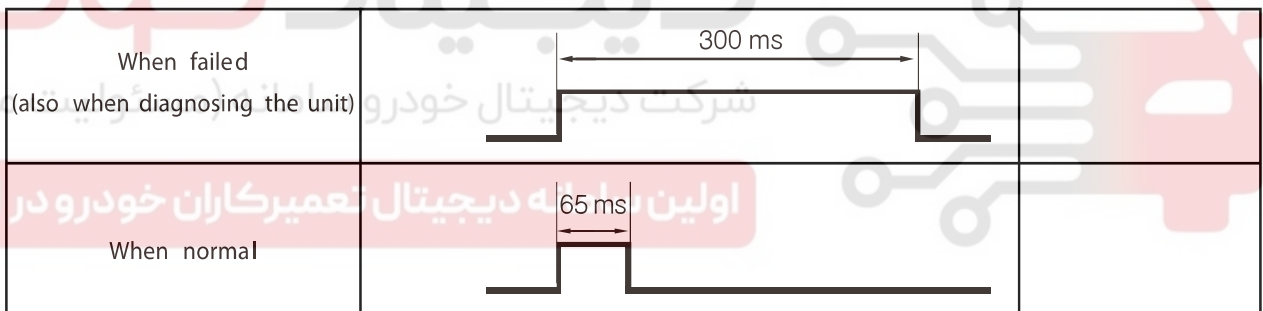
3. TROUBLESHOOTING OF SENSOR

When the power is applied (gear selector lever is in "R" position), the sensor will be diagnosed once. If found any failure due to open circuit to sensor or communication error, warning buzzer sounds for 3 seconds and the data on failed sensor transmits to the instrument panel to light up the corresponding LED. If normal, the warning buzzer sounds only for 65 ms.



1. Whenever the power is applied, the diagnosis mode is initiated.
2. Sensor failure conditions (conditions for warning beep due to failure)
 - Sensor failure conditions (conditions for warning beep
 - Open in sending circuit
 - Open in receiving circuit
 - Open in power circuit (+, -)

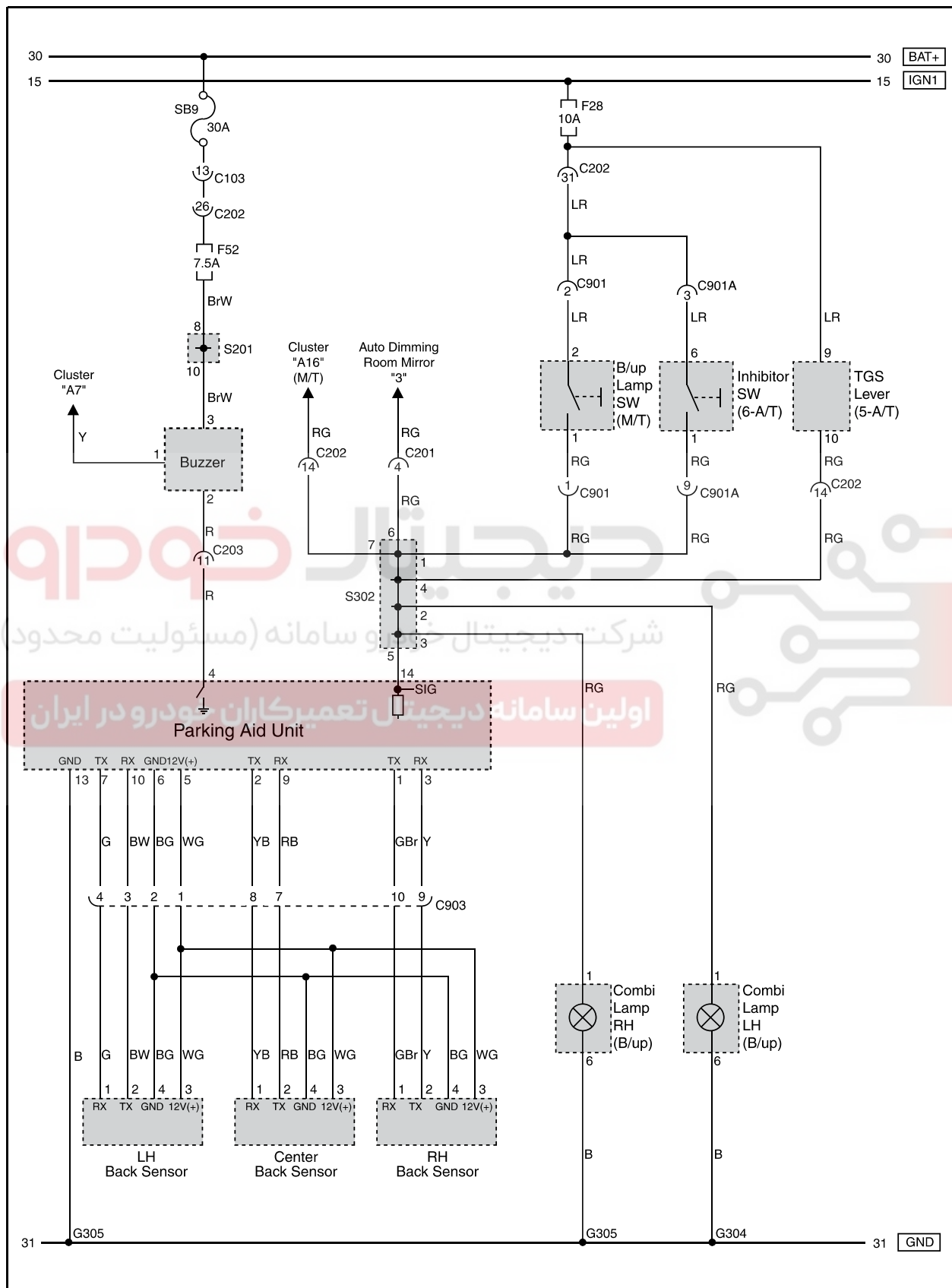
► Warning Beeps



Modification basis	
Application basis	
Affected VIN	

PAS
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4. CIRCUIT DIAGRAM



PAS
undefined

Modification basis	
Application basis	
Affected VIN	

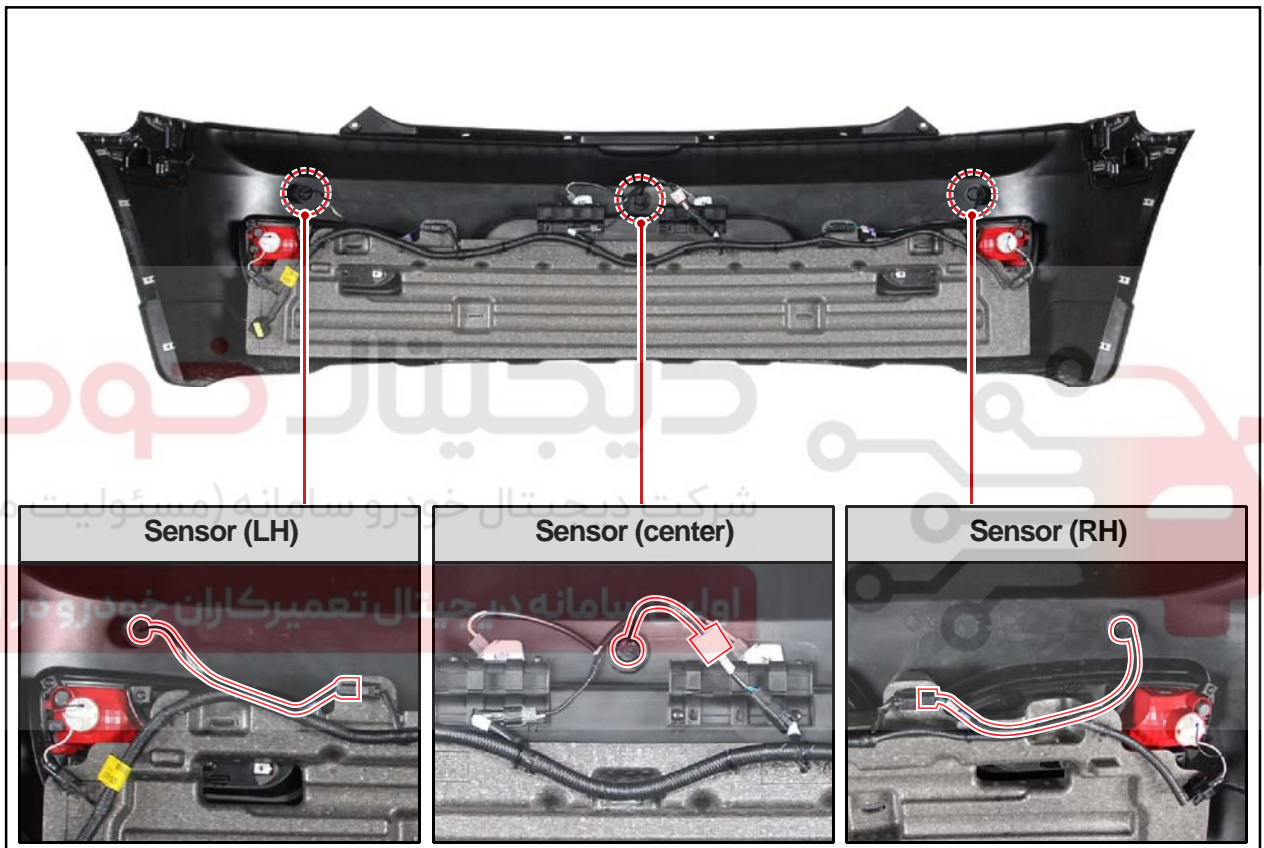
REMOVAL AND INSTALLATION

8790-03 PARKING AID SENSOR

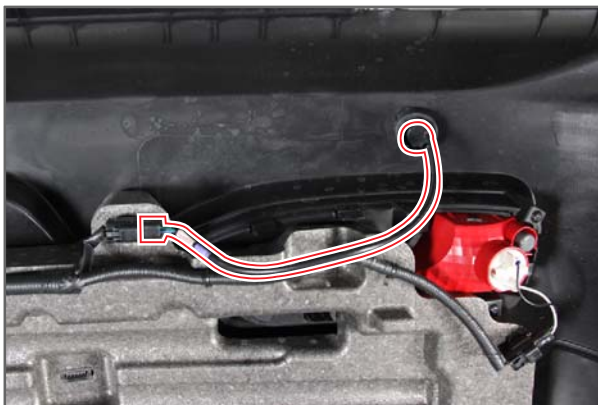
CAUTION

- The PAS unit is installed in the rear right quarter panel. Therefore, remove the rear right quarter trim before working on the PAS unit (refer to "Body" section).

Preceding work 1. Remove the rear bumper.



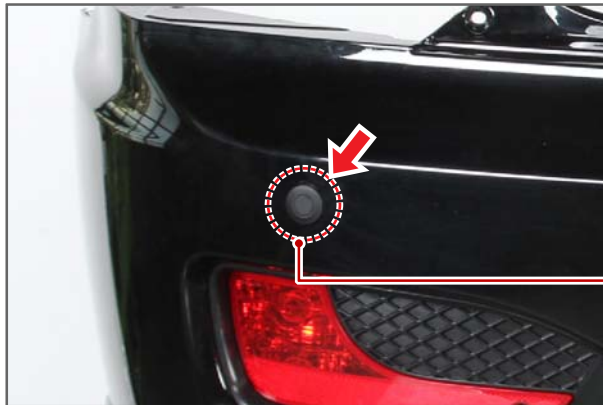
1. Disconnect the connector and remove the sensor by rotating the cover.



Modification basis	
Application basis	
Affected VIN	

PAS
undefined

- ELECTRI C
- FUSE AND
- STICS
- IMMOBILIZER
- CLUSTER
- LAMP
- SWITCH
- WIPER & WASHER
- RAIN SENSOR
- PAS
- AUDIO SYSTEM



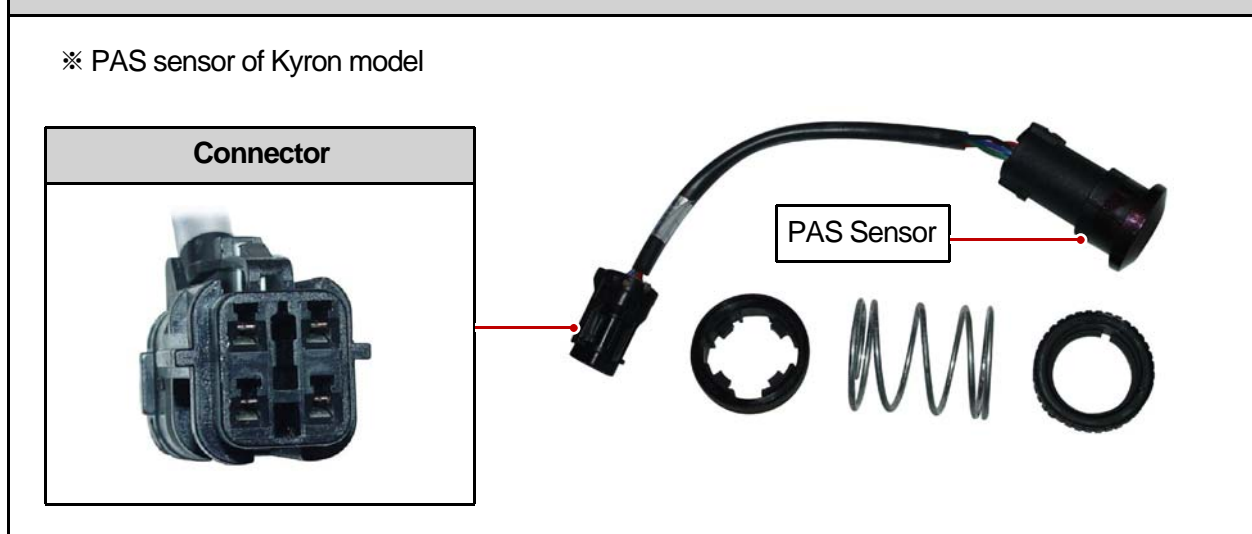
2. Remove the sensor from the bumper.



Components of PAS Sensor



Reference



PAS
undefined

Modification basis	
Application basis	
Affected VIN	