SYSTEM DESCRIPTION

1. GENERAL

(a) This system uses ultrasonic sensors to detect any obstacles at the corners and the rear of the vehicle. The system then informs the driver of the distance between the sensors and the obstacles as well as their positions by indicating them on the clearance sonar display and by sounding a buzzer.

2. FUNCTIONS OF COMPONENTS

Components	Function
Ultrasonic Sensor	Ultrasonic sensor consists of a sensor portion that transmits and receives ultrasonic waves and a pre-amplifier that amplifies the waves. The ultrasonic sensor outputs the ultrasonic transmission and reception signals to the clearance warning ECU.
Clearance Sonar Main Switch	Turns the clearance sonar system on and off.
Clearance Warning Buzzer	Emits an intermittent sound to inform the driver that the ECU has detected an obstacle within prescribed ranges.
Clearance Warning ECU	Judges the approximate distance between the vehicle and the obstacle based on the signals from the ultrasonic sensors and sends the display signal to the clearance sonar indicator and the buzzer signal to the clearance warning buzzer.
Indicators	Displays the location of the obstacle and the approximate distance between the vehicle and the obstacle.
Speed Sensor	Detects speed of each wheel and inputs the data into the clearance warning ECU via the combination meter.
Park / Neutral Position Switch (A/T)	Sends a signal that activates the clearance sonar system when the shift lever is moved to the R position.

3. OPERATION EXPLANATION

(a) The clearance warning ECU determines whether the clearance sonar system should be operated based on the clearance sonar main switch on/off stratus, the shift position and the vehicle speed.

(b) When the system operates, the clearance warning ECU transmits ultrasonic waves from the ultrasonic sensors. If these waves encounter an obstacle within one or more of the sensors' ranges, the waves are reflected back to the sensors, which transmit them to the clearance warning ECU. Based on this information, the clearance warning ECU sends signals to the indicator and the clearance warning buzzer. The approximate distance between the vehicle and the obstacle is then indicated, and the buzzer sounds.
HINT:
Refer to "OPERATION CHECK" for detailed operation (See page PM-36).

PM

HOW TO PROCEED WITH TROUBLESHOOTING

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	CUSTOMER PROBLEM ANALYSIS

NEXT

3	CHECK INITIAL CHECK FUNCTION

NEXT

4	PROBLEM SYMPTOMS TABLE

THE CORRESPONDING SYMPTOM EXISTS (Go to step 6)

THE CORRESPONDING SYSTEM DOES NOT EXIST (Go to step 5)

5	BASED ON THE MALFUNCTION SYMPTOM, PERFORM THE TROUBLESHOOTING BELOW

(a) Operation check (See page PM-36).
(b) Terminals of ECU (See page PM-43).

NEXT

6	ADJUST, REPAIR OR REPLACE

NEXT

7	CONFIRMATION TEST

NEXT

END