

Park Assist Repair

My XC90 has rear park assist, an active safety technology to help the driver navigate in reverse to avoid crashing into nearby objects. Sensors (visible as nickel size dimples in the bumper) emit high-frequency sound waves to detect objects. The sensors emit sound pulses undetectable by human ears¹ that reflect off nearby objects. The built in receiver detects the reflected waves and the Park Assist Module (PAM) calculates the distance the vehicle is to the object. An object within 8' (max range) sounds an audible alarm whose cadence increases as the rear bumper approaches the object.

Placing the vehicle in reverse activates the system and a message is displayed on the LCD screen.



A few years ago, after Easter, the parking assist quit. No message, no beeps! I'd become reliant on the proximity alarm to warn when the rear bumper approached another vehicle when backing from a parking space.

¹ Some people can hear each sensor click or pulse when park

I was bound and determined to dig into the problem when I found "spare" time. At first, I tried listening for telltale clicking noises emanating from the sensors, but they were silent. It wasn't possible for all sensors to be defective. Regardless, on a foray to the U-Pick it salvage yard, I liberated 3 sensors from a Lincoln Towne Car² for my parts bin.

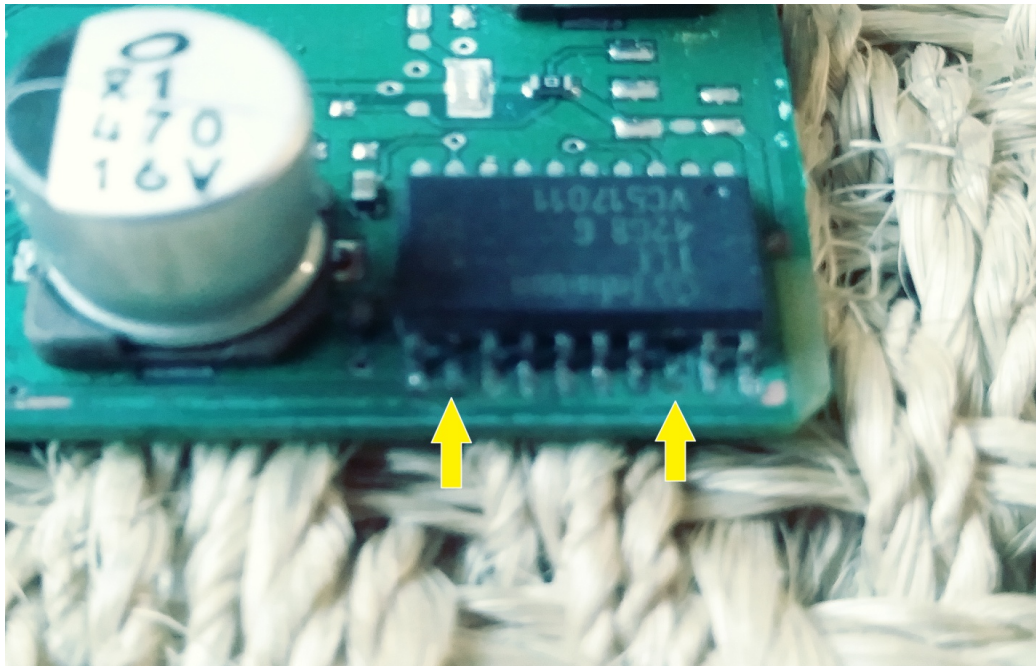
The last warm day of October, Steve and I visited the U-Pick it yard. Steve harvested a clock-spring and I, a PAM which was installed later that day. Now Park Assist message lights up and the PAM beeps when the rear bumper approaches an object.

Curiosity is a terrible curse. Why did the original module fail? I needed to know. I opened the case and removed the circuit board and examined it closely.



Forensic analysis revealed water intruded the case and shorted two legs of the voltage regulator IC, vaporizing them and leaving telltale green-blue corrosion residue on the circuit board.

² They're the same because Ford owned Volvo, Land Rover and Jaguar; hence, some parts are in common during that period of ownership.



Arrows show missing legs

How did water intrude the case? What was the source?

The module is attached to the body in the cargo well (left side), facing up below the tailgate hinge. That's when I recalled the Easter trip to Captiva Island Florida to meet my daughter and her family at a beach rental. I'd packed a 60 quart cooler with food, beverages and ice. The cooler was the last item packed, and closing the rear hatch pushed it snugly into the cargo bay. The cooler leaked, water dripped down and over the Park Assist Module into the storage well. Alternately, the water may have originated from a leaky bottle in the beverage cup immediately above the PAM. The rear facing seats were used to transport the grandchildren and they have to "hydrate"; hence, water bottle in the beverage cup.

I thought, "I can fix this." A replacement voltage regulator IC chip (\$5) was ordered. I intend to remove the defective IC and replace it. The module should fully recover from this electronic surgery.

It was in error the engineers thought an electrical module should be installed open end up near a beverage container and below the hatch hinge; thus, ensuring liquid intrusion. This circumstance should have been foreseen by alert engineers. The PAM should be installed with the open end down or the seams sealed with silicone to prevent liquid intrusion.

As an aside, recently a driver brought me a Volvo 960 because it "cut out!" I'd owned the vehicle and had driven it and never had a problem. I checked the fuel and electrical systems for obvious problems; all was good. I decided to run a diagnostic and inserted the OBDII connector to the vehicle port, adjacent to the parking brake handle between the two front seats.

The scanner would not connect to the vehicle computer. Close inspection revealed soft drink and coffee residue in that area. Yup, a beverage was dumped into the OBDII port and the liquid was intermittently shorting out the vehicle computer causing it to quit momentarily. I cleaned the port and ended the problem and admonished the driver for placing a beverage in that location.

Beverages are conductive fluids, as such must be kept away from the center console. Spilling a liquid on the center console can cause erratic shifting and selector light failure. Modern cars shift by wire; there are no cables or levers between the gear selector and the transmission, just micro switches, connectors and wires to a transmission control module. So if you drink NA beverages and drive, don't set the drink on the console; a spill in modern high tech vehicles will prove costly and inconvenient.

BTW, replacement Park Assist Modules are available on eBay, \$25 and up. Before replacing a PAM, check the connections for oxidation and the case for water intrusion. Clean the pin connections and the circuit board with alcohol and a tooth brush, it may work. .



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He'll respond pleasantly to questions about your Volvo.