1989–1996 Corvette

Low-Tire-Pressure-Warning System

Tech Tip: by Mike McCloskey

If you own, service or are planning to purchase a 1989 through 1996 Corvette, sooner or later you will encounter the LTPWS or Low Tire Pressure Warning System, RPO UJ6. When you do, its operation and repair may prove to be quite a mystery. I'll try to unravel some of the confusion with what I've learned in repairing that option on my 1993 Corvette.

General Motors developed the system in 1986 and introduced it as an option on 1989 Corvettes. Its purpose was to warn the driver when tire pressure in any of the four tires fell below 25 PSI by illuminating a low-tire-pressure light on the center console display. There was an additional light on the display that read Service LTPWS if there was a fault in the system. This light illuminated any time one or more of the four transmitters in the tires failed to send its individual signal or code.

Trying to make sense of the vendor's or GM part numbers or later GM crossover part numbers is very confusing, and I suggest you simply follow the color-coded labels on each transmitter. Each of the four has a different color label as follows: blue is RF (passenger side front), orange is RR, green is LF (driver side front) and yellow is LR. This color arrangement applies to both black and white units. It is important to know that these assemblies have been discontinued by GM since 1996 and there are none in the GM parts system to the best of my knowledge. Used transmitters are frequently advertised on the Internet by dealers and hobbyists with prices ranging from $75 to $225 each. (Search LTPWS.)

If you have a Service LTPWS light on the display, you must first determine which transmitter is not working. Each one sends a signal every 30 to 60 seconds at speeds above 20 MPH. As long at the receiver in the dash is getting four different code inputs, the light stays out. When a transmitter fails to send its code, the Service LTPWS light comes on. The Low Tire Pressure light will still function even with the Service LTPWS light illuminated provided the wheel transmitter is good. To find the failed transmitter, lower the tire pressure in any tire to about 20 PSI and then drive the car for two minutes above 25 MPH. If you do not get a low-pressure light, you have found the defective unit. If you do get a light, the transmitter in the low tire is working properly. Continue the test by re-inflating that tire and lowering pressure in another. Continue until you find the corner that does not illuminate the light. Note that the ignition must be cycled off and on after each test to reset (turn off) the Low Tire Pressure light.

Next, carefully dismount the Corvette tire and remove the band and transmitter with a 5/16" nut driver. Have the tire shop use extreme caution when breaking the outer bead so as to not damage the transmitter or band as parts of both may be needed for the repair. Note the color of the case (black or white) and the color of the label (blue, orange, green or yellow) and begin searching for a replacement. The correct color case is a must but the label color is not absolute. If you give up on finding the exact label color, the other three colors may be rewired to transmit the signal of the label color you need.

This procedure is explained below. Even though the transmitters are not location specific, it is necessary for them to transmit four different codes to prevent the service light from illuminating. In the design phase GM considered having the low tire light designate the specific location of the low tire. But it was then noted that the transmitters would get moved from corner to corner during tire rotations or replacement and dropped the idea.

If you find a used transmitter without a band and/or counterweight, you may re-use the parts removed from the wheel provided they were not damaged during dismounting. I suggest you bench test a replacement transmitter prior to installation on the wheel and remounting of the tire. To do this test, sit in the car and turn on the ignition. Hold the transmitter vertically and rapidly tap either end against the palm of your hand for 45 to 60 seconds. If the transmitter is good the low tire pressure light will illuminate. If you have acquired the correct-case and label color, you can install them on the wheel, remount the tire, have it balanced and install it on the car. The LTPWS light should no longer illuminate. Test drive for at least five minutes above 25 MPH to confirm the fix.

If you cannot find the correct label color, the fix is a little more difficult but doable. Buy a transmitter with whatever color label you can find and do the tap test prior to proceeding. To make the new transmitter send the code of a different color label do the following: Depress the retaining tab on the band and slide the transmitter off Carefully pry off the back cover and remove the circuit board and power supply (black plastic assembly) as a unit. They both slip into the case and will simply slide out. Very important: the power supply is attached to the circuit board with two tiny wires. Be very careful and handle these two components as a unit so not to damage this attachment. When reinstalling the assembly in the case, insure that it goes in the same way it came out with respect to the internal ribs in the case. You should not have to use force; it will slide in without resistance if properly aligned.

Again, there are four unique digital codes that transmit four different radio signals.

Looking at the component side of the circuit board where all the little electronic components are attached, find a rectangular microchip labeled UI on the board. It will be necessary to cut or solder one or two terminals on this chip to change the code. Position the circuit board so the chip is just left of center and note a small round depression on its face in the upper left corner. Count down the left side of the chip and identify the bottom two terminals which are numbers 6 and 7. The wiring arrangement of these two terminals determines the four codes to be transmitted. Turn the circuit board and power supply over. Terms 6 and 7 are now on the lower right of the chip and on the backside of the circuit board. They will be soldered to the board and this connection is called a pad. It will be necessary to rewire one or both of these pads to change the code.
Note: common trace.

The wiring for pads 6 and 7 is as follows:

- Orange label transmitter (RR):
  6 & 7 are both open
  (not wired to common strip)
- Green label transmitter (LF):
  6 wired, 7 open
- Yellow label transmitter (LR):
  6 open, 7 wired
- Blue label transmitter (RF):
  6 & 7 are both wired

The copper strip or trace adjacent and common to pads 6 and 7 must either be cut at one or both pads or soldered across to one or both pads. To make a cut, use an Exacto knife to cut the trace(s) between the pad and the common trace as required. It is necessary to cut through the protective clear coating and the green masking layer as well as the copper trace. Be very careful. If a cut is required, insure

that you cut completely through the copper trace. If you must attach the 6 or 7 pad (or both) to the common trace to get the label color you need, carefully scrape through the coating and green mask exposing the copper common trace then float solder from the pad or pads to the trace. Example: If the defective transmitter had an orange label and all you could find was a green label, cut the trace between pad 6 and the common and voila, you have made an orange label transmitter. One shortcut: If you are making a blue label transmitter from an orange, simply solder 6 and 7 pads together and then float solder across to the common trace.

Reassemble the transmitter and prior to installing on the wheel perform the tap test to insure you get a low tire pressure light. Install assembly on wheel, mount tire, install on car and road test as outlined above. If the repair is correct, you will no longer have the dreaded Service LTPWS light.

Tools needed: small screwdriver, soldering iron and solder, 5/16-nut driver, Exacto knife. MAM

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