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## AUTOMATIC TRANSMISSION GEAR INDICATOR LIGHT REPLACEMENT

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On 928s with automatic transmissions, Porsche put repeater lights at the end of the tachometer's sweep to indicate what gear you're in (this leads some enthusiastic 928 racers to talk about "shifting at P"). These lights sooner or later stop working, leading to some guesswork, particularly at night. This article describes our procedure (as done on an '87 S4) for replacing these lights.

This task is somewhat complex and requires careful work, but is otherwise very "doable". We developed this procedure out of necessity; the P and D lights in Gary's '87 S4 both failed at about 84,000 miles when the instrument panel was shipped via UPS for odometer repair. These are apparently the only two that fail at all early, as they are the most frequently illuminated.

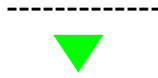
OK, here goes, step by step. Pardon the lack of photos; we did it, then realized that pictures might have been nice, but hope that we've made the text clear enough to make up for this.

1. Remove the instrument pod from the car (there are other writeups available for this, seek out the one that works for you and your car).
2. With the pod upside down, remove the two bolts on each end of the instrument panel. A 5 mm Allen wrench or socket is required to remove these. As these bolts are different, we recommend that after removal, you re-insert each bolt back into the pod at its respective end to minimize errors in replacing them. In addition, Gary strongly recommends that you make an alignment mark on the offset cam and aluminum piece on the right side of the pod and on the attachment point at the pod before loosening that bolt. This will allow you to relocate it in exactly the same position when reattaching the instruments to the pod. Trying to correctly orient this piece and tighten the bolt while you are installing the pod into the dash is a real pain - BTDT!
3. Remove the nine Phillips-head screws around the perimeter of the back side of the instrument panel. Carefully lift the instruments away from the frame and the transparent front "glass". Pull the "pigtail" of eight insulated wires through the opening in the back of the frame.

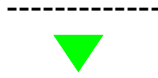
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4. There are three "slot head" screws and five 8 mm hex nuts holding the tachometer to the back side of the instrument panel. Remove all these screws and hex nuts. Carefully hold the tachometer so it does not fall away from the frame, then carefully pull it away from the frame, gently removing the eight-wire pigtail from the slot bracket in the frame and feeding it out through the opening on the right side of the tachometer.
5. Carefully remove the three screws on the back side of the tachometer and the two screws on the outer edge of the front face (DO NOT TURN the two screws on the back side that are recessed into small holes in the frame itself). This will allow you to slightly separate the tachometer "head" from its frame.
6. Lift the tachometer head slightly off its frame, then use small needle-nose pliers to remove the five connectors for the small insulated wires from their respective connecting posts, which are on the opposite ends of the five hex nuts you removed in Step 4. Note which wire goes to which post for proper re-assembly.
7. Place the tachometer upside down on a frame that will support it without damaging the dial face or needle. We used a piece of 4" PVC pipe coupling; we attached three or four pieces of masking tape to the back side of the tachometer and the sides of the coupling to provide a fairly rigid work surface.
8. Now you can see the six VERY small incandescent lights that illuminate the "PRND32" figures on the right side of the tachometer. These are 12-volt bulbs, so, using a 12-volt DC power source, you can CAREFULLY (the leads are fragile) make contact on each side of the leads of each bulb for final verification of exactly which bulbs are burned out.
9. Remove the burned out bulb(s) by using small, sharp side-cutters to cut the leads at the surface of the circuit board. Do this carefully, and protect your eyes and face when cutting the second lead on each bulb as they tend to fly up from the cutting force.
10. Now you are ready to solder the replacement bulb(s) in place. We used "Mini Lamps" from Radio Shack. These are 12 volt, 25 mA bulbs (Radio Shack part number 272-1141A, cost about \$1.25 each). They have slightly larger glass envelopes than the original Porsche bulbs, but fit nicely in the slots provided. Use clear bulbs in all slots, as the green color of the D indicator is due to a green filter in the tachometer face. When installed, these bulbs provide illumination at least 90% as bright as the original bulbs.
11. We left pigtails about one inch long on all the leads, then stripped them back about 1/8" (these small diameter wires require specially sized strippers or very careful knife work), then placed the copper leads horizontally across the solder joints where the original bulbs had been cut out. We DID NOT insert the bulbs into the slots at this time. We then soldered each bulb's leads in place; this requires a



small-tip 25-30 watt soldering iron\*, small-diameter solder wire, small needle-nose pliers to hold the pigtails in place, and three or four very steady hands.

12. After each bulb's leads were soldered in place, we checked to see there was no "bridging" of the solder (that is, solder inadvertently reaching a neighboring connection), then verified that the contacts were good and bulbs operating by using probes from a 12-volt source to touch the fresh solder on each side of the connection. After verification, we carefully placed each new bulb in its proper slot, used a little RTV to permanently position the bulb, then smiled in relief!
13. We cleaned all electrical contacts, then reassembled the instruments, starting with Step 6 above and working back through Step 1. After all of the instrument panel is reassembled, you might consider taking out the three light bulbs at the bottom of the panel (larger black sockets, each takes about a quarter-turn counterclockwise to remove) and dusting them off for brighten the illumination. For that matter, while you're in there, you would be better off in the long run to replace them now at a cost of less than \$5, as it will save a lot of work and possible profanity at a later date when the old bulbs fail and you have to remove the pod again!. The small black sockets scattered on the left and right of the instrument panel are for the individual warning symbols. These can also be removed for dusting but are on so little that they should last for a century or millennium!
14. Before reattaching the instrument panel to the pod, we suggest you connect all the wires from the dash to the instrument panel, then turn on the parking lights and ignition switch, then run the gear selector from P through 2. This allows you to verify that all of the lights work before you do all the work of reinstalling the pod. Note that the three bulbs for general illumination of the instruments will not light unless the leads to the dash light potentiometer on the pod are connected to each other, or to the potentiometer.
15. If the lights now glow correctly, congratulations; you did it, just as we did!

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\* Radio Shack lists several small soldering irons in their catalog. Here are some options worth considering if you do not already have one:

- a 25-watt pencil iron (#64-2070) for about \$7
- a five-piece basic soldering kit (#64-2802) for about \$8
- a fully-equipped eleven-piece kit (#64-2803) for about \$20