Section 2: General Odometer Surgery & Repair
1986-1993 240 ELECTRONIC Speedometers
(NOT for 1985 and older mechanical units)

For this set of instructions, I will not go into detail on removing the 240 instrument cluster from the dash. For detailed instructions on this, please refer to my 240 white face gauge installation instructions at http://www.davebarton.com/pdf/240faceinstall81-93.pdf.

Locate and remove the 7 Phillips head screws around the outer edge of the gauge box.
Ignore the red arrows in this photo.

<<< Here’s the back of the electronic speedometer in your cluster.

Remove the 4 Slotted Screws noted by the red arrows. Lift the gauge and circuit board assembly out of the box and the speedo will easily separate from the rest of the assembly.

If your cluster has a tach, you'll see this little item. Don't lose it. It will fall out if you turn the box over. How about you just don't tip it over?
Here's the speedo after separating it from everything else. Exciting, huh?

Turn it over and you'll see this thingy below....

There's a small electric motor in there. Behind that is the small plastic gear that breaks so often in '86-'93 240's.

You will be removing these two Phillip's screws shortly. But before you do that, you have a decision. Most 240 owners are already decisive. Let's see if YOU are.

The metal faceplate on the front of the speedo can get in the way of this operation. This can be done WITHOUT removing the metal faceplate, but it will be a bit harder to work in there behind that motor and circuit board.

Have a look here. Not a lot of room, but it can be done.

Decision time now . . . .   Ok, keep reading.
If you have decided to remove the faceplate first, this step will tell you what to do.

<<Removing the Needle: Grip the center plastic hub of the speedo needle and turn it counter-clockwise (toward the "MPH"). Be careful not to put pressure on the orange needle pointer. It's plastic and will snap off if you do.

There is an internal stop inside the speedometer that makes the needle stop are zero. You will be turning and forcing it counter-clockwise, toward the bottom, past that zero stop.

The needle has a bit of glue to hold it to the shaft. After you feel the glue break free, the needle will turn past zero and it will get easier to turn. Then continue turning it counter-clockwise, while at the same time pulling it toward you. It'll come off in your hand without any fuss.

Then, using a small slotted screwdriver (it's important to use one that fits well in the slots), unscrew the two small faceplate screws. These screws are a soft metal and will be gouged easily and distorted if you use the wrong tool and/or too much force.

Remove the faceplate.

Remember those two Phillip's screws a couple steps back? Remove them if you haven't yet.

After the two Phillip's screws are removed, pull back the circuit board assembly. The next two photos show how it will look if the needle and faceplate are removed first.

With this photo and the photo on the next page, I'm showing you two different possibilities, which you will see when you open this part of the speedo up. That gray gear contraption part is the GEAR POD. It might come out with the motor or it might stay in the hole . . . it doesn't matter. Either way is good.

That small gray 25 tooth gear on the front of the gear pod is the part that fails most often. If you look closely, this 25 tooth gear has a tooth missing. On the back of the GEAR POD you will see a black 15 tooth gear (it's a separate piece on an original Volvo part). Examine it also for damage.
This photo is pretty much the same as the previous photo, except that you can see the back side of the GEAR POD. The edge of the 25 tooth gear can be seen under it, noted by the red arrow.

After removing the GEAR POD, examine it closely. The gear pod is known to fail, although not quite as often as the small gear. Usually, if this part fails, you will find visible damage. If you want to better ensure a working odometer for years to come, you might consider replacing this part even if you don't find any obvious damage.

The new 25 tooth gear will replace that broken one before the gear pod is re-installed.

A few words of advice:

Look hard for small broken pieces. Use compressed air if you have it to help dislodge and remove any small bits of gear that might be remaining inside.

I received an email from a late model 240 owner who replaced a broken gear and couldn't get things to move more than 1/10 click after several re-assemblies. He finally discovered that a piece of the broken gear was lodged in the works. Here's how things went:

"It was maddening. I agree, however, 7 times is simply a testament to my stubbornness, or so my wife would say! By the third evolution I could remove the instrument cluster in about 60 seconds and I had the rear wheel jacked up to facilitate a test drive!"

"The giveaway was the trip 1/10 numbers would move a bit, then the upper main odometer would look like it was trying to turn, the numbers would move slightly, then it would all stop. It was behaving like a jam was somewhere in there. Your description of not giving up on your mechanical odometer gear troubleshoot was inspirational, I went back and re-read it after the fifth removal."

"The broken gear piece was miniscule and the only way I found it was by rotating the gear mechanism with my finger while I had the gear case cracked open. I kept getting to one spot that had noticeable resistance but could see nothing. I ran the tip of a tweezers in between the gear teeth and on one pass a small piece of plastic came out, and that was it." S.D., Wake, VA
Now you may re-assemble everything. Total time for this operation can be around an hour.

**STILL NOT WORKING?**

**IMPORTANT: READ THIS**

While I have not directly experienced this myself, I was told by a speedo repair professional that on a number of occasions they had experienced a "dead" odometer after replacing a broken gear in one of these speedos. The speedo functioned worked, but the odometer just wouldn't turn. On each of these occasions, the odometer would mysteriously start working after a period of driving . . . sometimes after an hour. Sometimes after a week. So far, no one has been able to say precisely why this happens, but it is generally thought that there must be some sort of circuit breaker protection designed into the speedometer circuit board that finally resets after a period of time. After I posted this information here, I began receiving identical reports from a number of customers who have installed new gears in electronic speedos. So if this happens to you, give it some time and see if it comes back to life. If you have a similar experience, feel free to write me. I'd like to hear about it.

"Sure enough it started working after about an hour or so of driving. Specifically, I drove for about an hour without any action from the odometer, then shut it down for about 5-6 hours, then started another drive and it was working immediately upon starting out." C.S., Raynham, MA

Thanks go to Martin Uden of Australia for submitting the below info:

"Read your page regarding odo repairs and I have good experience in repairing most electronic VDO units of this type that use the 25t gear. They are found on Nissan Ford and Holden (GM) cars here in Australia and I also get the situation occasionally where the odo won’t work after changing the gear. What I do to fix it (99% of the time this works) is to reassemble the instruments into the car without putting on the plastic front so that I can get to the odo digits. I have a 3/16th inch thick length of plastic (so as not to harm the dials) that I have sharpened as you would a pencil and whilst the vehicle is moving, I physically “attack” the odo 1st number on its gear cog (odo, not the trip), gently pushing it back and forth until it begins working. Then of course you can remove the instrument housing and put it back together properly. Usual disclaimer of course regarding fiddling whilst you drive is not legal!! Hoping that may help the more impatient Volvo owner."