"Speedo Rebuild"
or
"You were going HOW fast?"

An Article by Larry Paulick

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Preface: Larry Paulick is not only providing great articles on performance improvements in acceleration and speed, he is also concerned with safety. This article will allow you to fix that needle bouncing speedometer that says you were doing 120 on the back straight, and that lying odometer that makes you think you're been getting 38 m.p.g.. On the other hand, maybe leave it alone? Don't forget those new O-rings for the rest of the instruments as well. See TigersUnited Forum for source.

Editor

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Speedometer Rebuild

Speedometer Disassembly and Cleaning

My MKI speedometer was jumping at speed, and so I decided to clean and lubricate it. The following is what I learned on, first disassembling and cleaning an Alpine speedo, and then the Tiger unit. They are essentially the same, and the procedures, the same.

Disassembly

Note: *– All references are looking at the speedo, as you would, in the car. A reference point on the speedo, is the odometer shaft, which is pointing down in the car.*

After removing the speedo from the car, place it on a clean work surface. The bezel is removed by turning the bezel on the speedo container, which I will call the can.

You may have to bend the tabs on the back of the bezel to loosen the bezel. It also helps to use a rubber jar opener to grasp the bezel while twisting. The bezel tabs then align with slots in the can, and the bezel can be removed, with the glass, and what is left of the gasket sealing the glass to the can.

Remove this and set it aside. Also remove the inner concave surround, that is tight to the can, and set it aside as well.

The next step is to remove the speedo needle from the shaft. Be very careful in this step, so as not to damage the shaft and needle.

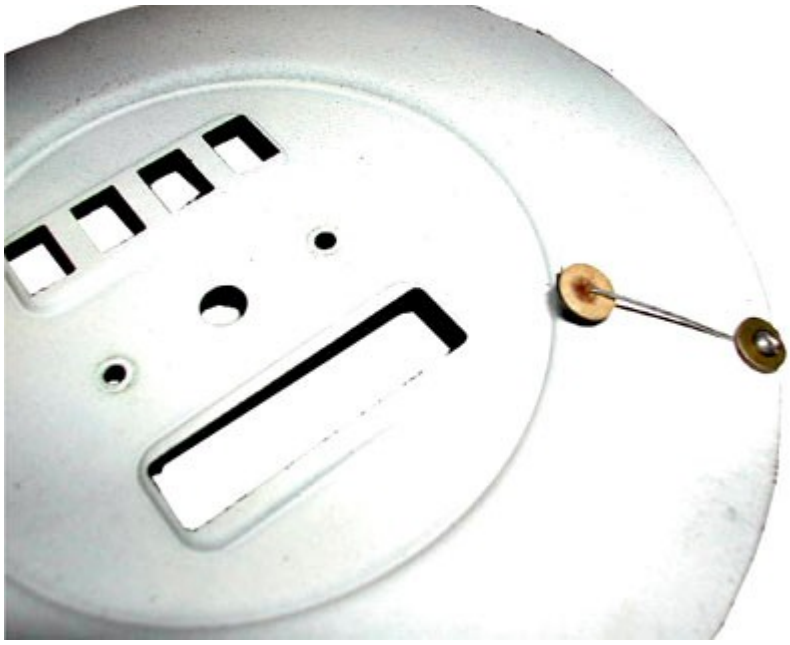
Needle Removal Tool

Using a nail remover, place the tool fully under the needle, so that it is under the needle body, and resting on one of the 2 screws that hold the faceplate to the inner workings.

Gently, but firmly pry up on the needle. It may be on tight, or it may be on loose, or it may fly off into space, so take your time in doing this.

Set the needle aside, and remove the 2 screws holding the face plate on. Set the faceplate and screws aside.

Turn the faceplate over and note that the needle rest on the front of the faceplate is accurately a spring that is attached on the back with a rivet. You will need to note this for the reassembly procedure.



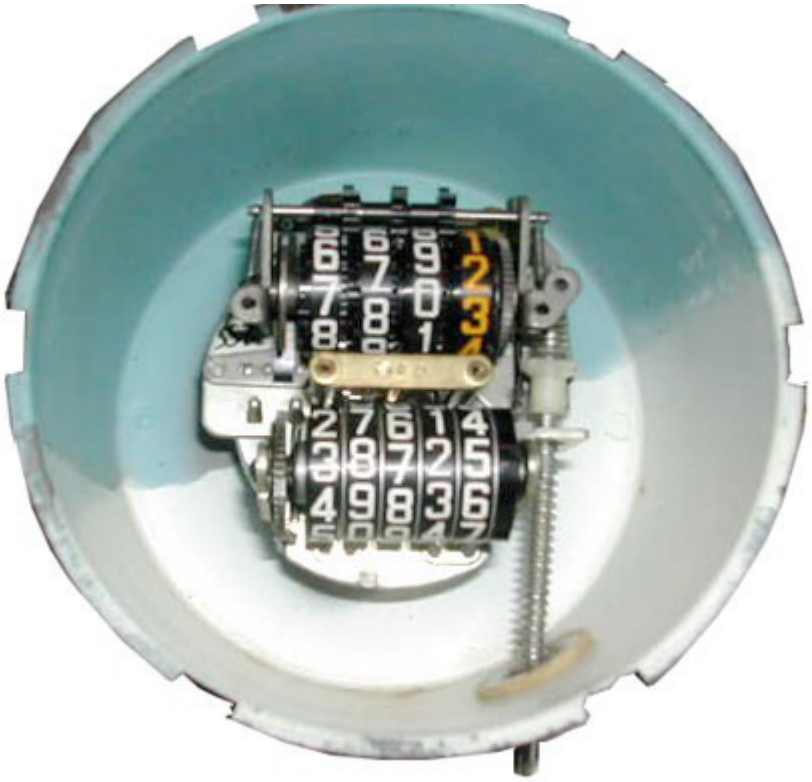
Needle Rest, backside

The shaft extension for the odometer reset shaft is removed next. The shaft extension is held on to the shaft, by either a small screw, or

a press fit pin, that needs to be driven out. If it is a pin, do this carefully, and set the extension shaft and pin or screw aside.

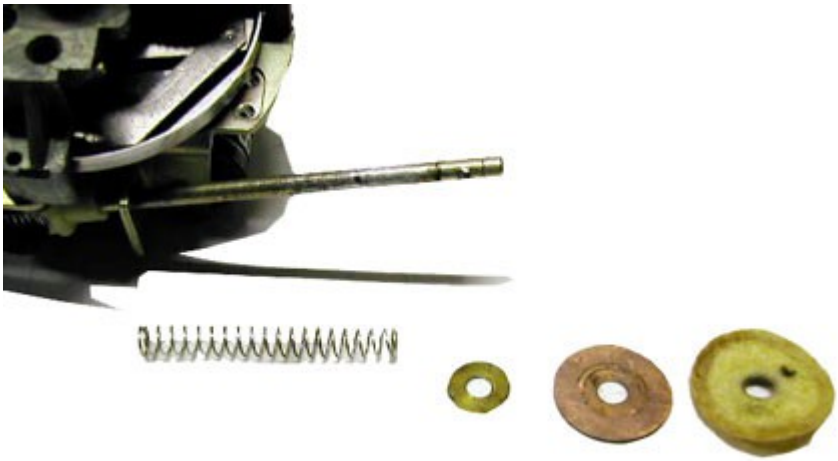
Turn the can over, and there are 2 screws in the back, that hold the speedo mechanism in the can. Remove these 2 screws, and set them aside.

The speedo mechanism can now be removed from the can, by tilting the mechanism in the can, and removing it.



Speedo Mechanism

The odometer reset shaft has a spring, small brass washer, larger copper washer, and felt washer to keep dust out of the can. Remove them, and set them aside.

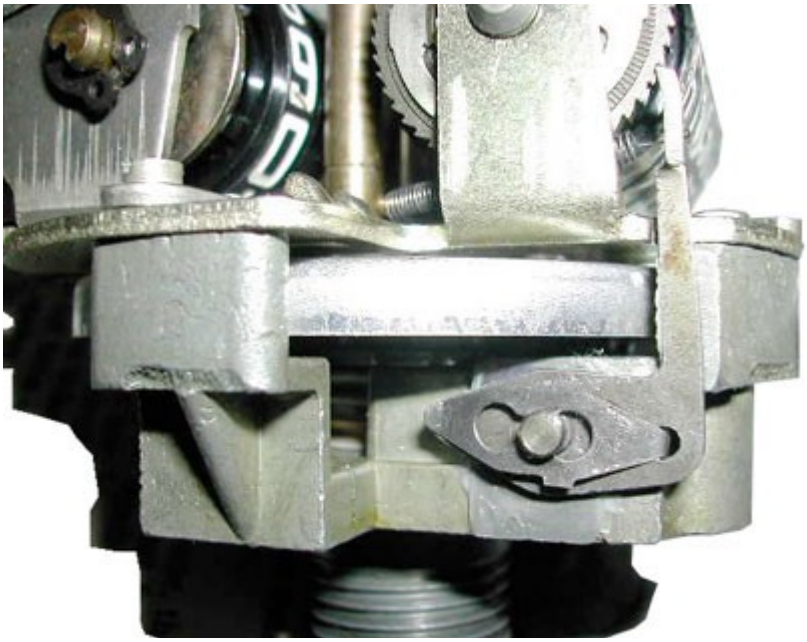


Odometer Reset

Next you will remove 2 small springs. They are the springs that provide tension on the left and right arm, that advance the trip and regular odometer.

Springs

Be very careful with this operation, and remove both of these springs, and set aside. Note how these springs are attached. The spring with the closed loops on each end, goes on the trip odometer advance arm. The spring with one end open, goes on the regular odometer advance arm.



Note Spring Attach

The next step is to remove 4 screws, that hold the front of the speed, containing the odometers, and the rear cast part of the speedo.

Remove the shorter of the screws at the bottom, and set aside.

Retaining Screws

Remove the other three screws at 9, 12, and 3 o'clock, and set aside.

The front and back portion will separate, and the trip odometer on the top will come out of the top of the front of the speedo.

Set the trip odometer aside. Also set the front of the speedo aside, being careful with this portion, as it contains the delicate portion of the speedo mechanism, the needle shaft and spring for the speedo.

Needle Pin and Drag cup

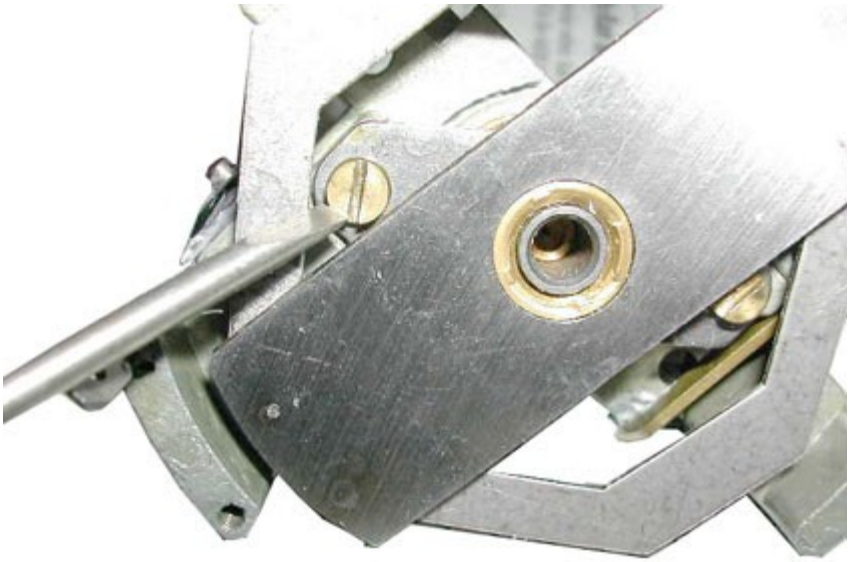
Odometer Mechanism

Disassembly of the Rear of the Speedo

You can now start the dissemble of the rear of the speedo, as well as the cleaning, and re lubrication.

The shaft that contains what I think makes the magnetic impulse for the speedo, can now be removed from the cast portion of the rear of the speedo.

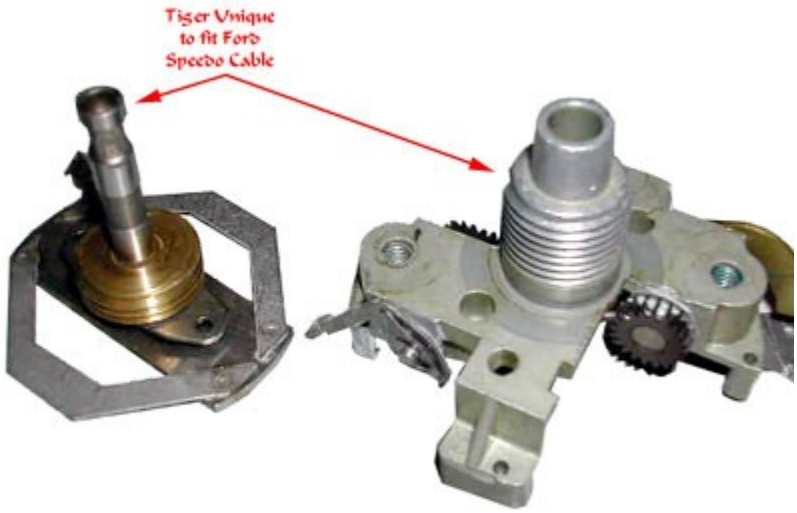
There are 2 brass screws, which should be removed, and the shaft and screws set aside.



Brass Screws

Drive Mechanism and Magnetic Impulse

The cast portion contains 2 gears with shafts, connected to arms, with retaining spring clips that move the 2 odometers.



Disassembled

Remove the spring clip, and disassemble the arm and gear and shaft, from the cast portion.

Do only one assembly at a time, so you don't mix the gears and arm assemblies.

After removal, clean the parts, and the bore in the cast piece. I used alcohol and pipe cleaners, which worked quite well.

After the parts are clean, lubricate the shaft, arm, and gear, where they come in contact with other moving parts. I used Lithium grease, applying it with a pipe cleaner.

Do like wise with the other gear and arm assembly.

Speedometer Re-Assembly

Reassemble the gear, arm and retaining clip.

The cast portion where the moving part I called the shaft with magnetic assembly can now be cleaned. I cleaned the bore in the cast piece, the shaft, and the brass worm gear. I did not clean the bearing surface of the plate, which has the 2 brass screws going through, that rides on the center shaft of this mechanism.

This area appeared clean, moved freely, and if I did lubricate this area, I would want to use clock oil.

Like wise, I did not clean the end of the shaft that the needle shaft rides on. This area appeared clean, and I would want to use clock oil, if it needed lubrication.

After you have finished this portion, assemble the shaft in the cast portion, and reattach the 2 brass screws.

You have now finished cleaning and lubricating the mechanical back portion of the speedo.

I looked at the 2 odometer mechanism, and they appeared to be clean and did not need to disassemble, clean, and lubricate.

The assembly is the reverse. Of course, you will want to clean the faceplate, glass, and add a new sealing o-ring, if needed. I used water and a clean paper towel to carefully clean the parts.

Be very careful, in putting the 2 springs on the arms that turn the odometers. They can get away from you very easily, and are hard to replace.

Also be very careful in assembling the front and rear of the speedo. You want to carefully reassemble the parts, so the needle spindle mates into the back portion of the speedo. Then put the 4 screws to hold this entire assembly together.

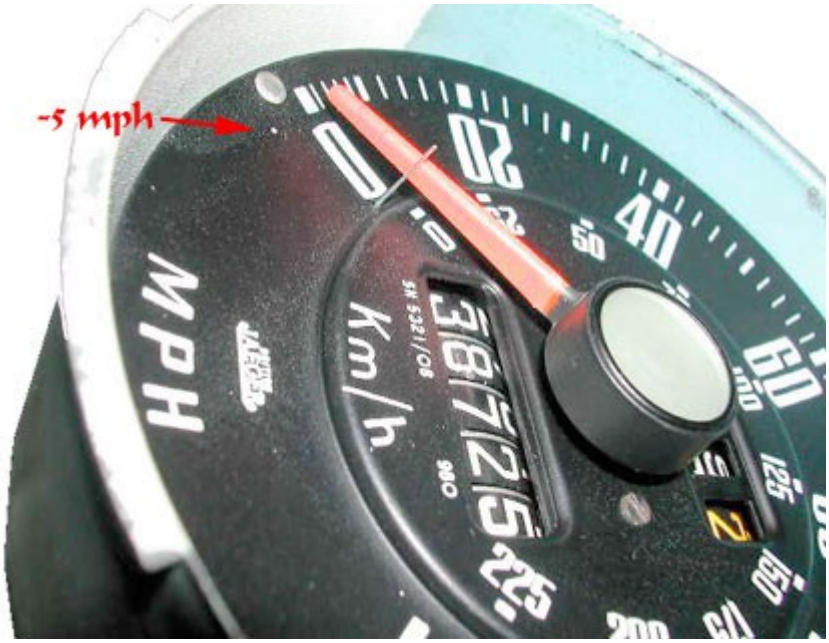
When you have the front and portion of the speedo together, put in back into the can, with the spring, and 3 different washers, on the odometer reset shaft, and add the screws in the back to hold the speedo mechanism to the can.

Place the faceplate on the mechanism, and secure with the 2 screws.

On the faceplate, there is a white dot, that is about minus 5 mph. Carefully place the needle on the shaft, so that the needle is pointing at the minus 5 mph white dot. Do this with he speedo, in its normal position, i.e. with the faceplate vertical. Make sure that the needle is pointing to minus 5 mph.

Before Needle Stop Insertion.

Now using a small pair of pliers, push the needle stop into the speedo, and move the needle to the positive side of the mph. The needle will now be preloaded, and rest against the needle stop. I understand that this is how the needle was set up in the factory.



Needle against stop (note -5 mph dot near rivet)

Of course, you can check the speedo, against other accurate cars, at whatever mph you want and, add the preload to adjust the speedo to give an accurate mph at, at least one speed.

Good Luck with your new speedo.

Larry