

GM

Instrument Gauge Cluster Repair:

Stepper Motors

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(stepper motors, bulbs and more...)

1 foot of solder wire

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Work in a static-free area, grounding yourself to board if possible.

See the picture number that corresponds with the step number below.

#1. The cluster case is comprised of three different sections.

Remove the front/lens cover by gently lifting the plastic locking tabs.

****IMPORTANT TO FOLLOW CALIBRATION STEPS PRECISELY****

(any gauges that rotate counterclockwise, the calibration instructions below will be reversed)

#2. Turn the gauge needles clockwise to about half of their readings (see picture #2), and place a small piece of masking where the needles would be at zero.

#3. Turn the needles back counterclockwise until you feel the stop point (about 1/4" past 0). Then mark the needles positions on the tape with a pen, so you can put them back to their original positions after you replace the stepper motors.

#4. Turn the needles further counter clockwise to break their seals. Then, using a regular kitchen fork, place it under the needle and gently press down on the handle to evenly pry the needle upward and remove. Remove all the gauge needles.

#5. You can now remove the back cover and separate the middle and back sections to expose the circuit board and stepper motors. See the old stepper motor in picture #5.

#6. On the opposite side of the circuit board from the stepper motors (flip the board over), you'll see the 4 solder points for each stepper motor. These are easy to determine as they stick up more and have bent posts. See picture #6.

#7. Use a pencil type soldering iron (not over 35watts) with a point or small chisel tip. Gun type irons aren't correct for circuit boards and will do damage.

Plug the soldering iron in and let it warm up for about 5 minutes, so that it reaches its operating temperature. You'll then take your spring cocked desolder vacuum and hold it right to the solder that's to be removed, and briefly touch the solder (not the board or soldering pad) with the iron to melt the solder, then press the button on the desolder sucker to remove the solder < this pulling the melted solder up into the desolder vac. Do this for all 4 of the stepper motor solder joints. Make sure all solder's removed /don't bend the pin to break solder, it will pull the pad off. **It's very important to not over heat the solder/the board. So please do not hold the iron to heat the solder joints for 2 to 3 seconds at a time, then let cool between attempts. If you hold the iron to the joint more than briefly, the excessive heat can (likely will) remove the trace pad from the board.**

#8. Put the new stepper in place... It can only go on one way --you can't put in the board wrong (see #9). Press on it firmly to make sure it's all the way flush to the board. Turn the board over (to the solder side) and bend the 4 pins like the old ones were < this is to keep the stepper motor firmly to the board while you solder. Frequently clean the iron tip, by rubbing the hot iron tip on a clean damp paper towel or sponge.

#10. It's important at this point to clean the iron tip. With the heated iron, melt some solder to the tip, then wipe to tin the iron tip.

With the heated and tinned iron, touch the stepper motor pin and the solder pad (the solder pad is the small metal circle on the board around the hole the stepper motor pins pressed through). < At the same time you'll touch the solder wire to the solder pad (not to the iron tip). The solder should melt almost immediately. You want the solder joint to

look like the old factory solder joint < not too much solder, and not too little. . Frequently clean the iron tip, by rubbing the hot iron tip on a clean damp paper towel or sponge. Any contamination can make the joint not make a good connection and the gauge not work.
< You don't want to realise that after getting the cluster back installed in car.

Solder all 4 of the pins.

Repeat this for all of the stepper motors you replace.

It's very important to not over heat the solder/the board. So please don't hold the iron to heat the solder joints for 2 to 3 seconds at a time, then let cool between attempts. If you continuously hold the iron to the joint, the excessive heat can ruin other components of the board. Excessive heat can also remove the solder pad from the board -ruining the circuit board, so please only hold the iron to the board briefly (2 to 3 seconds at a time).

#11. Put the rear cover back on.

Gently press the needles back on (don't press them on so tight that they'll drag on the face-plate)

#12. Turn the needles one complete rotation counterclockwise, then line to the marks you made in step #3.. See Picture #12. If you accidentally pass the marks, you can continue to turn the needle counterclockwise and try again.

Now remove the tape, put the front cover back on.

To replace the bulbs; First, distinguish between a bulb and LED. Some GM clusters use LEDs as warning indicator illumination. The LEDs rarely burn out and aren't user serviceable with this kit. The bulbs in this kit replace the back-lighting and turn signal indicators.

Pull the old bulbs off, noting their contact pads on the board. On each of the contact pads for the bulbs, make a small puddle of solder. Now heat the solder and set one of the bulb's leads in the hot solder, repeat for other side. The bulbs have no polarity (there is no positive or negative side).

The insulators can be used or not. If the insulators are not used, just clip the lamp's wire leads to about 1/2 centimeter, and make sure the leads do not touch eachother.

Before you totally install the cluster back in the dash, first plug it in and test drive to make sure all is working properly. If for some reason the repair doesn't take or there are any issues while repairing contact me for support through ebay message or at dmw@carolina.rr.com

Due to the manufacturing process, the soldering iron will emit smoke and a burning odor for the first several minutes of use. It's nothing to be concerned of, as it's only the machining and assembly oils burning off.

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