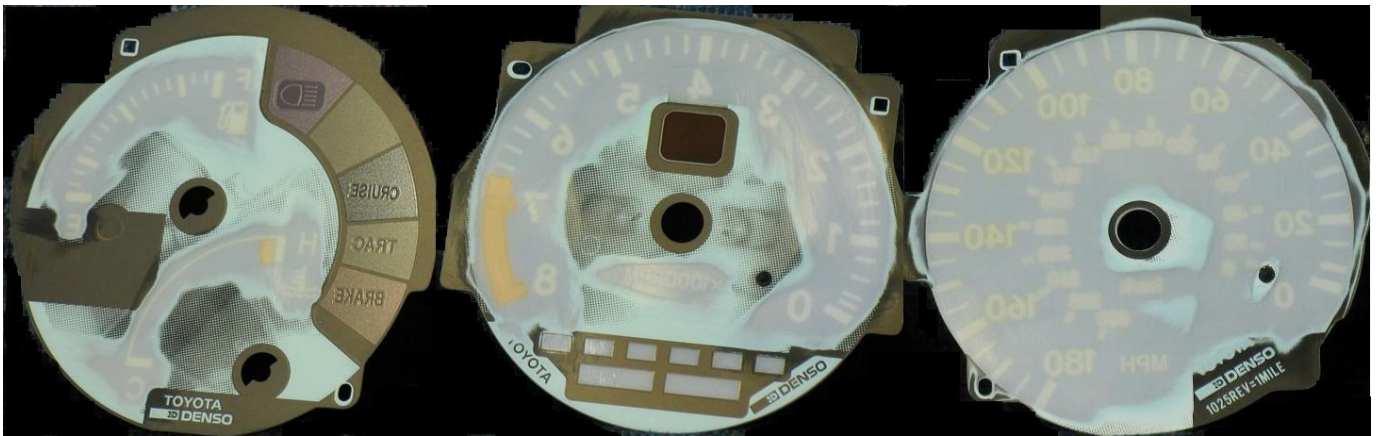


Instrument Cluster Retro:

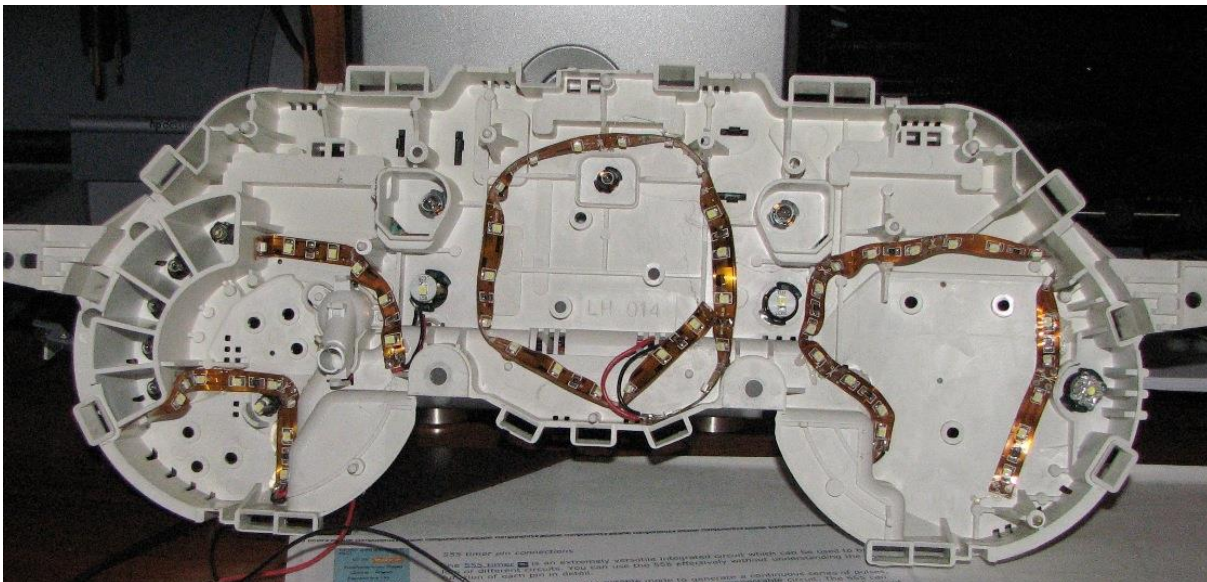
- 1) Remove clear Lens cover
- 2) Remove black bezel
- 3) Carefully, remove the 4 needles. Use a flat tine fork and leverage equally around the needle. Might not hurt putting blue painters tape on the bottom of the fork not to mar the gauge face. Once the needles are removed, pull them off by lifting one side and they should come off. There are 2 small strips of double stick tape one each gauge face that holds them on to the clear plastic diffuser.

When done, the tape will be on either the diffuser or the back of the gauge faces. A good exacto knife can scrape the tape off either. Now, take blue painters tape and install that over the gauge faces. This is very important as this will prevent the faces from getting scratched when sanding the backs.

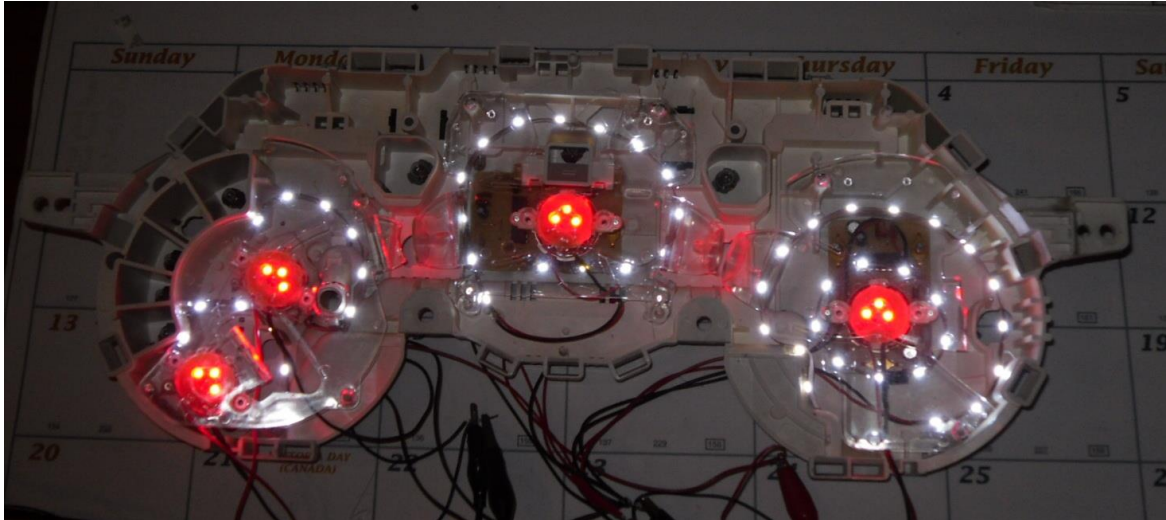
- 4) Sanding the back requires 3 levels. Start with 300 grit, then 600 grit then 1000 grit. Protect the gauge lens colors from getting scratched. I usually cover them with the tape. Like the warning window on the tach. I also made a plywood pad that has a hole in it to insert the needle pegs. Otherwise you're going to bust them off. Once sanded and cleaned up set them aside.



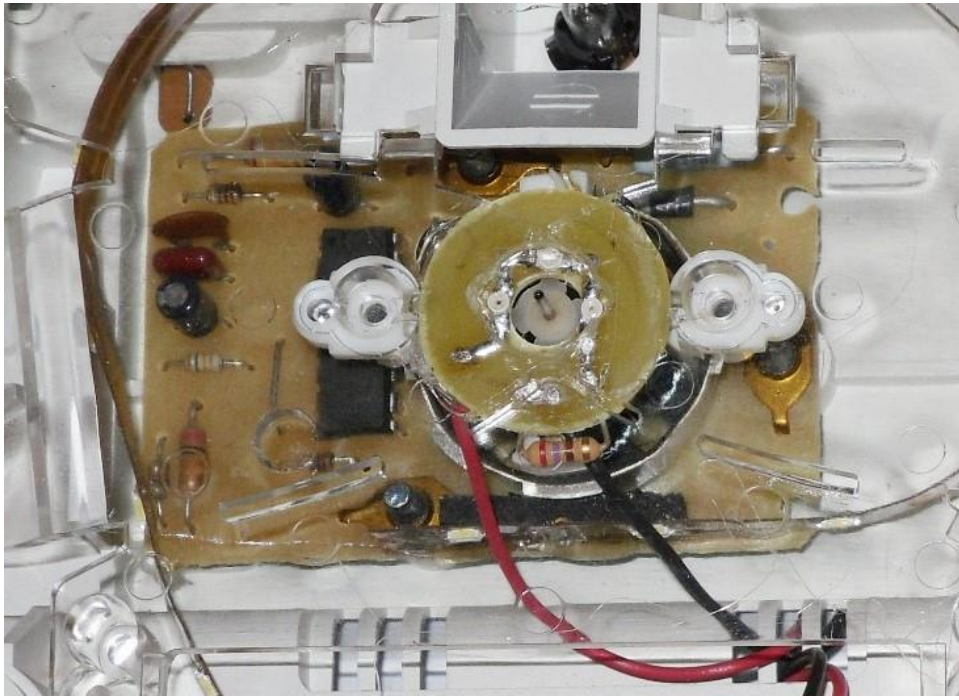
- 5) The LED interior lining is in a few steps. First, remove all the gauges from the core. Each has 3 screws and 6 for the temp/fuel. Also, remove the green bulbs and socket's (4ea). You're going to have to snip away several pieces of white plastic. One that surrounds the temp/fuel bulb socket and the same around the speedo bulb socket. There are 2 small vertical pieces on the right and left side of the tach area. Snip those off.



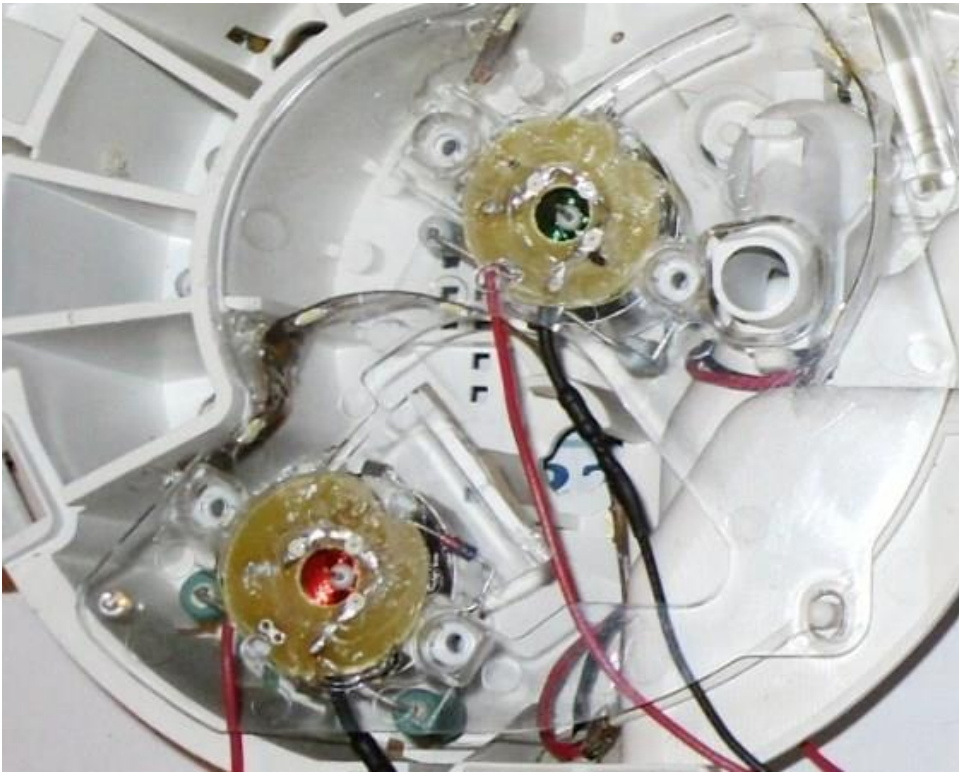
This shows what it looks like at real low illumination.

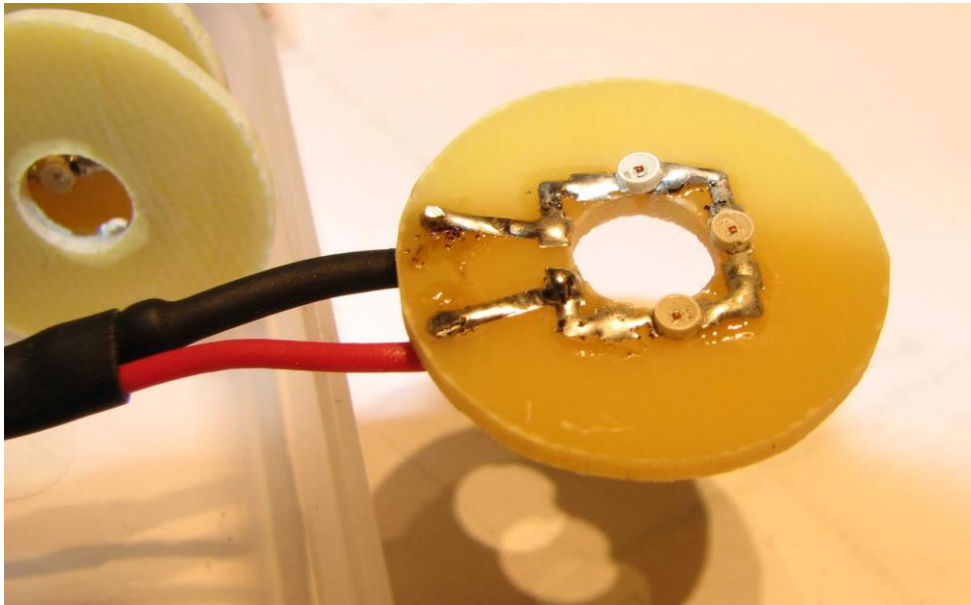


- 6) Solder onto the flex strips a red and black wire.(+, -) Make the wires 26ga.Make them about 8-12" long for feeding out of the cluster. You will need about 36" for the main cluster surround, a 3" piece on the tach and a 2" piece for the speedo. Need these for filling in blank areas.
- 7) Once done, the re-install the gauges. Then take the 3 diffusers off of each mechanism. Using a small Phillips. These 3 pieces need trimming and drilling. You need to cut the tach and speedo "wings" off. These are the areas that surround the OEM bulbs enabling the light to the diffuser. Cut them back to the little tab that extends off the wings.
See figure with red stripes showing where to cut.
- 8) Now drill a 3/8" larger hole through the needle opening. You need to enlarge these. On the fuel diffuser no holes are needed but you're going to need to dremel ALL 3 gauge face needle opening's to contour to the micro LED boards that will get glued in. Once this is done you're going to have to dremel each diffuser opening to fit the Needle Board. This requires semi-circle notching where the 3 micro LEDs rest on the board that go beyond the diffuser 3/8" opening. It is important that these boards fit flush to the underside of the diffuser. On the fuel/temp you're going to also have to dremel another semi-circle so the needle board fits around these plastic "pegs" on the diffuser. Plus dremeling out for the micro LEDs to rest flush. Hot glue these onto the back of the diffusers. You can see somewhat how I dremeled out a semi-circle in the diffuser so the LEDs are winged out. Once all dry fitted you hot glue them in



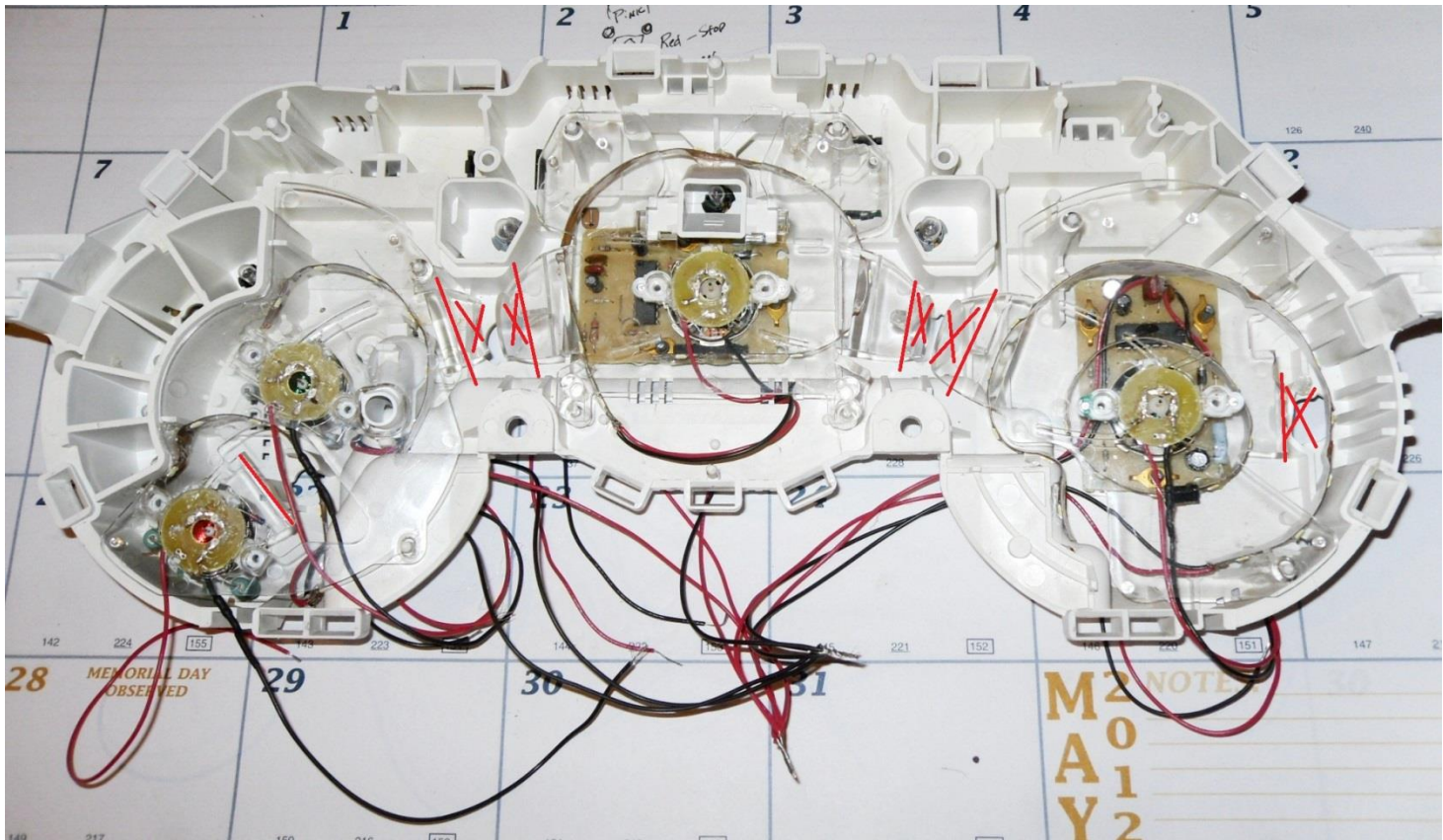
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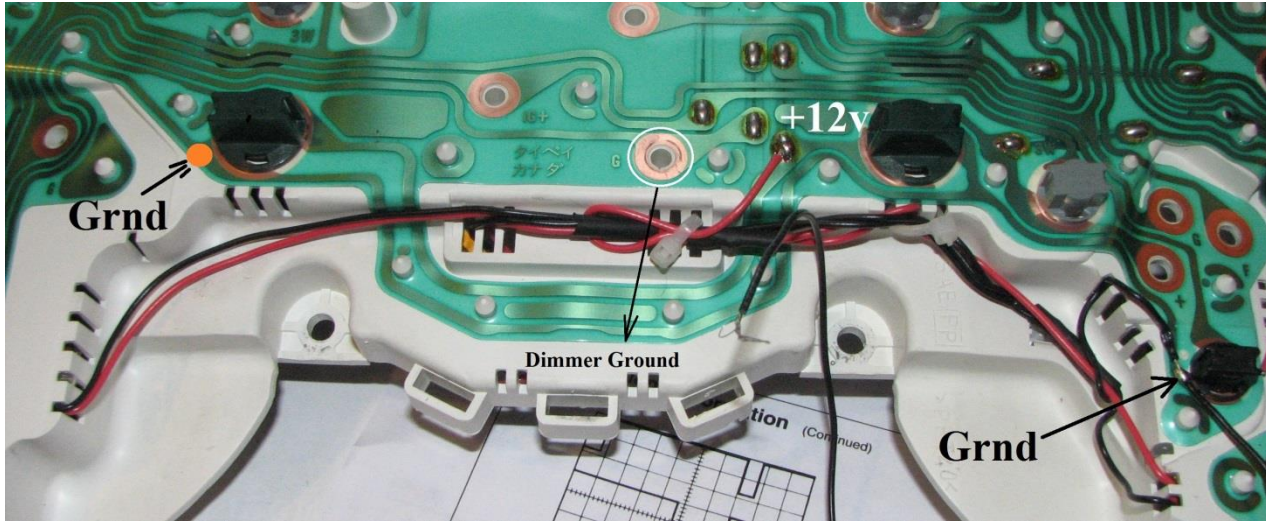
10)

Note that the micro LED board needs to be trimmed to fit within the gauge mechanism mounts. On the fuel/coolant ones there are 2 posts about 1/8" diameter that the micro board needs to be slotted so they fit and lock in.



Route the wires out the inner core vents to the back of the cluster. Make sure not to pinch the wires so keep them away from where the screws hold the diffusers onto the gauge assembly. On the Tach, install the exclamation tube making sure the LED strip in that area goes over it. Then slide the diffuser into the white plastic light tube, affix it to the slots on the diffuser and set into place. Once all the wires are routed out the back screw all the diffusers back into the gauge mechanisms. From here, it is a matter of wiring things together. But you need a power source. Solder

a black wire onto the Neg. bulb socket and a red wire to the Pos. side. All the black wires tie together and all the white and red wires get tied together. If you're using a dimmer board then this needs different wiring. The reds tie together, the whites tie together and the blacks tie together. All the blacks tie together + another black wire that goes out 18" as a pigtail. The Red Positive Wire from the bulb socket runs out as a 18" pigtail and NOT tied to ANY of the LED wires. I usually make a white pigtail wire for the whites and a blue or green pigtail wire that is attached to the LED led wires. Since there are 2 Red wires it is nice to isolate which is Power and which are the red needle wires.



So if you're using the dimer circuit you will have a Black, White, Red and Blue attaching to the dimmer circuit. Tie the "blue" wire and Red wire together if you want to keep the red needles always full bright and only dim the white background (my preference). Once all wired I shrink wrap the wires and use zip ties to hold the wires snug onto the back.

Peel off blue tape on the faces. Set In small pieces of double stick tape and re-install the gauge faces. Now you're ready for calibration. You're going to need a good voltmeter that can read HZ. A 555 Timer Freq. Generator and a cluster pin out map. I have made a set of cluster connectors with pig tails so I have all the proper wires sorted out. You send the cluster the desired freq. and set the needles appropriately. The fuel and Temp use specific resistors to ground to set them. 4 ohms is full fuel and 18 ohms is dead center Hot tick. I might have to supply you this timer circuit because I do not know if you have a source for a square wave generator, 12v supply, and even a VM that reads HZ. Plus I might have to send the proper resistors to setting the coolant and fuel. It really helps to have connectors to snap into the cluster with pigtails for all of the pinots that need connecting to do all these calibrations.