

Installation of gauge faces.

1. Cut out gauge faces (if you haven't already) along the cutout lines. Use a good pair of scissors to cut the outlines, and a sharp utility knife or X-Acto knife and a straight edge to cutout the interior cuts. The round holes where the needles and trip odometer reset shaft pass through the faces can be a pain, but take your time. There are dots drawn the faces that need to be cut out. These are alignment holes.
2. Start up your car and let it get up to operating temperature.
3. While it's warming up, the panel under the steering column needs to be removed. Using a 8mm socket and wrench, remove the 3 bolts at the bottom of the panel. Now grab the panel at the top and give a strong pull straight back. I usually grab the panel at the slot at the top of the panel at the steering column. It should pop out of place; it has a bunch of those spring clips.
4. This exposes three bolts for the black part of the dash. Using a 7mm socket and wrench, remove the 3 bolts at the bottom of the black part of the dash. There are two other bolts above the speedometer and tach that run straight up. There should be 5 bolts altogether.
5. You might want to shut off the car by now, if you haven't already.
6. Tilt the steering wheel to its lowest position. Grab the black piece of the dash and give it a tug straight back. It should pop loose and move towards you. If you're lucky, you'll only loose 1 of those spring clips. Now the tough part. You can either squeeze the top down in order to get it to come out, or you can disassemble the plastic should around the steering column by removing three screws from underneath. Pull the black piece out and disconnect the wires running to the rear window defroster switch.
7. You will now see the gauge package. You can remove the clear cover by using a 5.5mm socket, extensions and socket wrench. There should be 7 screws holding the clear plastic cover on. Don't lose the screws.
8. Note the positions of all of the needles. You can use some masking tape on the black bezel to mark their location.
9. To remove the gauge package from the car, remove the 4 screws (using a 7mm socket) that hold the gauge cluster to the dash. There is one in each corner.
10. Now that the cluster is loose, pull it out slightly and reach behind to disconnect the wire harnesses. There is one on each side (both have gray plugs) and they come apart by squeezing both clips and pulling. Thin hands are good at this time.
11. Now pull out the cluster out of the car (careful, the black bezel can come loose) and hold it above your head and say "Woohoo". Now set the cluster down wherever you're going to work on it and go get a refreshing drink, because I know you deserve it.
12. Now that you're refreshed, hopefully not too refreshed, it's time to start the disassembly of the cluster.
13. Remove the black bezel from the cluster. **Please note that these gauges are Electrostatic Discharge (ESD) sensitive, much like computer hardware. Please take precautions to eliminate the chance of ESD damage. A precaution can be (but not limited to) using a grounding strap.** Now gently pull the speedometer and tachometer from the cluster. They pull right out. Next pull out the 3 other gauge assemblies. Try to keep them in order, just to limit confusion.
14. To remove the needles, I used a regular fork. Just slide the tines of the fork on each side of the pivot point of the needle and carefully work the needle up and off the gauge. Let's start with the temp gauge. When removing the needle, try not to rotate it in anyway, this may help with needle realignment. Pop the needle off and set it down. The factory gauge face is glued to the clear plastic framework. Just peel the face off the frame. Don't clean off the glue, because it will be used to stick on the new faces. Grab the new temperature gauge face and stick it to the clear framework, aligning the holes. The faces should stick quite well. If they don't, I suggest 3M Super 77 spray adhesive, that's just what I use.
15. This step is optional, but I feel it is necessary. Flip the needles over and carefully scrape the white paint off the back of the needles. Use a sharp utility knife and scrape away. Now, I went to Wal-

- Mart and picked up a small bottle of Testors fluorescent orange model paint. I laid down several thin coats of orange until I got the desired look on the front. This way, the needles will be orange against white during the day and glowing orange against black at night. Also, paint the white on top of the black portion of the needle, to match the needles.
16. Now, if you're feeling lucky, you can press the needle back on and take your chances with the alignment. Or you can just lightly press the needle back on so that it's easy to remove if it needs to be realigned.
 17. The other gauges (Volt, Fuel and Oil Pressure) are exactly the same as the Temperature gauge. Due to variances, the Voltage and Fuels gauge faces may have to be cut apart and adhered to the clear framework independently for everything to line up correctly.
 18. The speedometer is slightly different. Note the location of the needle when at rest. Notice that if you flick the needle, it returns to the same position. Now fork the needle off and peel the face off. There will be two green plastic items that are used around the odometers that might stick to the face. If they do, pop them back into place in the clear framework. Resist the temptation to alter the mileage of your vehicle at this time. That is a big "No-No". Drop the new gauge face onto the clear framework. The hole around the trip odometer reset pole should be tight. Mark sure everything lines up. This is where taking your time with the knife and the straight edge will make a difference. You can press the needle onto the speedometer such that it comes to rest at the same spot it was before. It should come to rest slightly above the trip odometer reset pole.
 19. The tachometer is similar to the speedometer. The needle comes to rest at 0 RPM when it has no power, so you can play with it and it should return to 0 RPM. Pop off the needle and using a small (#0) Phillips screwdriver, remove the three screws. Don't lose those. The faces should peel right off now. Stick on the new face and reassemble the tach.
 20. This is now a good time to replace any light bulbs that may be burnt out.
 21. Assemble the cluster by installing the smaller gauges first and then the two larger ones.
 22. Go back to the car and plug the wiring harnesses back in and start the car. Let the car reach operating temperature and is running the same conditions as when you marked the needle positions (i.e. A/C on or off, stuff like that). Make sure that all the needles move freely and indicate the correct position (remember the masking tape on the bezel, now's the time to align the needles.) Align the needles, press them down pretty firm and replace the bezel and install the clear plastic cover.
 23. The rest is simply reassembly of the dashboard, which is the reverse of disassembly.
 24. Sit back with another refreshing beverage and bask in your handy work. Go and show all of your family, friends and neighbors.

I have also posted these instructions on www.geocities.com/slhrbacek/gaugeinstallation.html. Just in case.

One thing that I do suggest is the use of brighter light bulbs inside the cluster. The factory bulbs are a model 194. There is another bulb that looks the same and is twice as bright. These are denoted with a part number of W5W (2825). These are available at Wal-Mart or any auto parts store. You will need 5 bulbs.



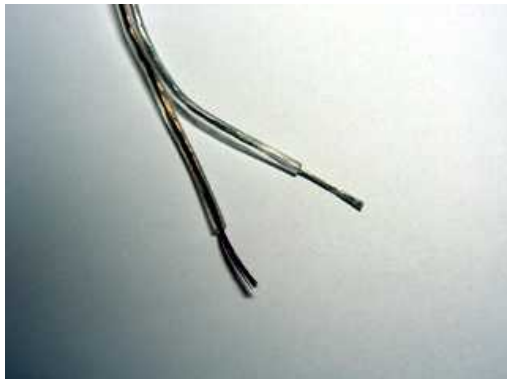
After doing a little research, the one of the specific uses for that bulb is the Front Side Marker Light for a 2002 BMW 325. That way you can search for it by application, if necessary.

Another suggestion for those of you with pre-1997 Thunderbird and Cougar models is to add a light bulb to the top of the speedometer to eliminate the dark spot that is created by the speedometer mechanism. Here is a step by step guide to building and assembly that will help to eliminate the dark spot from the top of the speedometer.

The supplies that are needed are shown in the photo at right. Two light bulbs are required, I suggest bulbs like the original factory bulbs. Those are #194, but if you can't find those, the W3W bulbs are the same. A short length of wire (about 6") and a self adhesive cable clip that I found in the automotive section at Wal-Mart.



Not shown in this photo is the electrical tape and a zip tie.

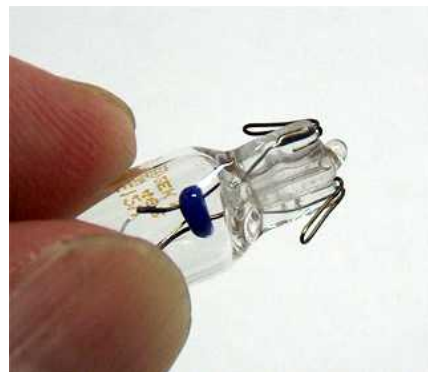


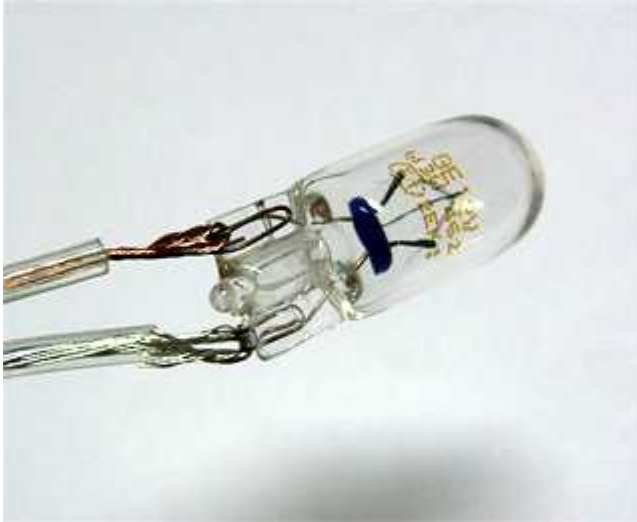
A little bit of soldering skill is required, but it's pretty easy. First Step: Separate the wires and strip about 1/2" of the insulation on both ends of the wire.

The wire doesn't have to be anything special. I just use speaker wire.

Step 2: Pull the electrical contacts on both bulbs away from the glass. You can see that the contacts are nothing more than loops of solid wire. This will allow you to feed the wire through the loops as shown in the next photos.

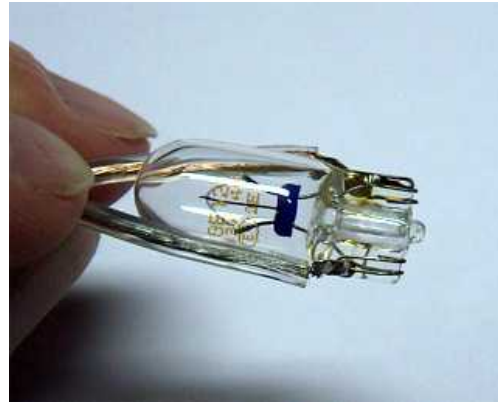
We will be wiring the two bulbs up in parallel.



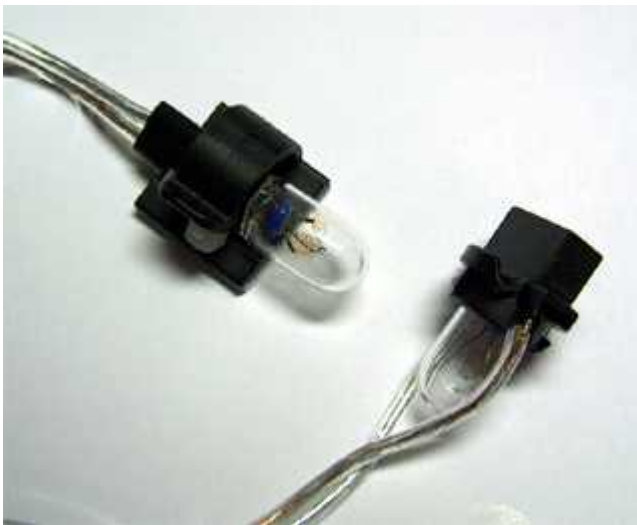


Note how the wires are oriented on this bulb. This is the one that will plug into the socket.

Step 3: Profit! No, just kidding. Sorry I had a little South Park flashback to the Underwear Gnomes. Now this is where your soldering skills will come into play. Carefully solder the wire to the contacts on each of the bulbs.



Step 4: Insulate the soldered connection with electrical tape. I like to use a zip tie to keep the electrical tape in place, but that's just me.



Step 5: Now it's time to assemble your newly manufactured assembly. This is what it should look like when finished. The bulb on the right is the one that plugs into the existing socket. I just have the bulb in the socket, so that you can see how the



wires are routed.

Here is a picture of the

extra light assembly installed. Just route the wires so that they don't interfere with the installation of the gauges. All in all, I have found that the best lighting scenario is to have the brighter 2825 bulbs installed on each side of the large gauges (shown with the red arrows) and then install the extra light assembly as indicated with the blue arrow.

