

Mercedes 107 Instrument Cluster Removal/Rebuilding /Replacement



Copyright © 2004 Steve J Loboyko. All rights reserved. This document is provided only with instrument clusters or components sold to the receiver of this document. All other uses prohibited.

Purpose Of This Document

The purpose of this document is to replace your Mercedes-Benz 107 (SL) instrument cluster with a woodgrained instrument cluster that I sell. The document may also be useful for repairing/refurbishing your instrument cluster. The document is centered around the US 560SL instrument clusters, but is useful for older cars.



Some people had mentioned that they thought that the finish of the dash I provided was too "light". Actually, I matched it to wood I had done (at great expense) by a Pebble Beach quality MB expert in North Carolina. It turns out, that the urethane over the wood turns very dark brown over years and years of UV exposure.



So, perhaps the installation of this item will give you some incentive to refinish your wood!

Very, very early 350/450 SL's used a "no-hole" (clock in middle vent position), one-piece front panel cluster (no filler panel). This is very different and not compatible with any units I presently work with. However, most of the advice in this manual remains applicable.

There is no information in this document on the repair of gauges themselves.

I provide completed instrument housings as well as just the "front piece" of the housing. If you have been sold the entire assembly, it has already been cleaned/polished and you need not perform many of the steps in this document.

If you have just the front piece, this document provides enough information to allow you to clean/refinish your instrument panel with show car results. Remember, this is the part of the car you look at the most, except maybe for the windshield!

NOTICE:

This document is provided as a convenience and guide. It is **NOT authoritative** and should be used as a supplement to the appropriate Mercedes-Benz manuals. A competent mechanic with appropriate tools should perform these procedures. ***No warranty or liability of any kind whatsoever is given/accepted for the use or misuse of this guide. The ultimate responsibility for performing these procedures is yours.***

Tools Required

Instrument Panel Removal Tools (provided for full cluster)
Brush (provided for full cluster)
1/2" Breaker Bar w/3/8 adapter
1/2" ratchet
8"+ extension
Open-end wrenches (13,10mm for oil connection to oil pressure gauges, pre-86)
Towel for oil "accidents" (pre-86)
Baggie with twist tie to hold oil in hose (pre-86)
1/2, 3/8" metric sockets (needed for steering wheel removal)
Hex metric sockets (Used to remove 86+ air bag, 4mm-latest models MAY have used Torx (this is the kind with the hexagonal rod sticking out of the socket)
1/4" ratchet, metric sockets, 6" extension (definitely need 6,7mm)
Small Philips (needed for 86+)
Very small straight screwdriver (used in refurbishing clear instrument covers)
Flannel polishing cloths - Wal-Mart auto department (used in refurbishing clear instrument covers)
Pencil or small pointed object (used in exchanging instrument light underlays)
Filament Tape (used to optionally secure filler panel under instrument housing)
Needlenose pliers (used to reflatten speed nuts on instrument panel clear cover)
Terrycloth Towel
Flat and clean area
Liquid detergent dish soap (NOT dishwasher liquid-used in cleaning items)
Paper/Pencil (used to note idiot light legends)
Flashlight (head mounted is very useful)
Another set of hands (a helper) is strongly recommended

Safety Notice

Certain steps require careful attention. The safety characteristics of the car can be compromised or personal injury can result by neglecting torque settings or steps in this document. A great deal of effort went into the preparation of this document (in a previous life, I was a technical writer); **please read it ENTIRELY before STARTING any procedure.**

Conditions

I would not recommend doing this in interior temperatures of under 60 F. The reason for this is

that you will be slightly distorting the plastic around the instrument panel, and if it is very cold it may be more prone to cracks. If you need to send me your original instrument cluster back before it gets warm enough to work, email me and I will arrange an extension. The risk is not worth it.

Lighting Check

Place the car in the ignition position (not start, ignition) and note the lights lit and the wording/symbols underneath. Write this down or draw a picture. Note any weak or missing lights. You may want to consult your owner's manual for what lights should be lit. Check the instrumentation lights that light when the headlights are lit. Later, you will refer to your notes as to what lamps, if any, need replacement. You do not want to repeat this procedure any more times than is absolutely necessary. If your car has many miles, you might consider replacing the bulbs before they fail. I have seen the very tiny bulbs lighting the instruments become weak (that is, they still light, but are not dead). I have also numerous examples of bulbs that light and have "dark spots", decreasing their brightness.

Not all bulbs are available at your local NAPA, etc; furthermore, some bulbs that look like they should fit may be too bright and/or put out too much wattage. This can be dangerous while driving at night, may damage or melt the instrument panel, or possibly damage the electronics. Consulting the owner's manual or your M-B dealer and acquiring bulbs ahead of time is a good option.

Battery Disconnection

Disconnecting the battery is **required** for these procedures, **especially if an airbag is present**. In any event, do not operate the lighting or the ignition of the car during these procedures.

Steering Wheel Removal

The safest and least likely to cause damage method to remove the instrument panel is to remove the steering wheel first. To doubly ensure that you put the wheel back on correctly, make certain that the car's wheels are exactly forwards and that the steering wheel is horizontal before proceeding.

86-89 and Airbag-equipped 85 107's

The airbag is NOT an uncontrolled bomb. If it were an unsafe device, it would not be installed and operational as per the Federal Government, in front of your face for hours at a time. Nonetheless, it must be respected. It is specifically designed to fire ONLY when very certain conditions are met and a substantial electrical current is applied. Jostling it will NOT set it off. Ordinary radio waves will not set it off. Nonetheless, heed these instructions carefully. Always face the steering wheel and air bag head on while working on it, leaning backwards.

Using a 4mm hex socket (note: very, very late SL's MAY use Torx head screws), locate the two screws behind the airbag and wheel and loosen them. They will likely NOT come entirely out and do not need to come out. The airbag should feel loose and removable. Carefully pull back the airbag and locate the power connector. Disconnect it from the airbag by wiggling the connector and pull it straight out. Immediately place the airbag on the ground **FACE UP and away** from the

car or anywhere you may step. This is important because should it fire, a balloon will fly upwards instead of a piece of metal at 200 miles per hour.

Mark the relationship between the splined shaft and the wheel with a very visible marker BEFORE removing the wheel.

Non-Airbag Equipped SL's

Up to about 1972:

Remove the Mercedes logo carefully avoiding marring the padding.

After 1972 to about '86:

Pull off the entire padded plate of the steering wheel. It is best to pull off starting in-between the spokes of the wheel to the left and right sides. Be very, very careful not to tear this piece.

All Models:

Use a breaker bar, an 8-12" extension, and a 10mm hex socket (it is possible that later models used a TORX socket). Earlier models used a 14mm or 18mm nut. Remove the countersunk screw or nut from the steering column at the center of the wheel. The best way to do this is to brace the wheel with your legs/knees to hold it. This is where another person can hold the wheel for you, and you do the turning. **Do NOT rely on the antitheft lock of the wheel to hold it in place for you; you may damage it.** The screw/nut will be tight, but it will break free. Use a ratchet to finish the job. Remove the wheel.

Plate Removal

On 86-89 107's, there is a plastic insulating plate that must be removed on the steering column, held by three Phillips screws. Remove the screws, and then remove the plastic plate. Do not lose any parts/screws.

Instrument Panel Removal

The instrument panel is surprisingly not held in by any fasteners. It is held by friction and a rubber gasket. The object is to push or pull the panel outwards just enough to expose the tubing/wiring/cabling for disconnection.

There are several suggested ways to do this:

1. Go under the dashboard and push the panel outwards.
2. Using hooks (tools actually provided to mechanics by Mercedes, functional copies of which I provide with the complete instrument panel), grapple both sides of the panel and wiggle it outwards.

This latter method is described here.

1. Using the provided hooks, slide them in with the prongs up and insert deeply at the middle and sides of the instrument cluster, between it and the padded rim. Then, turn the prongs INWARDS. Do **NOT** place undue pressure on the padding around the panel. ***It is old, brittle, and will crack if abused.***

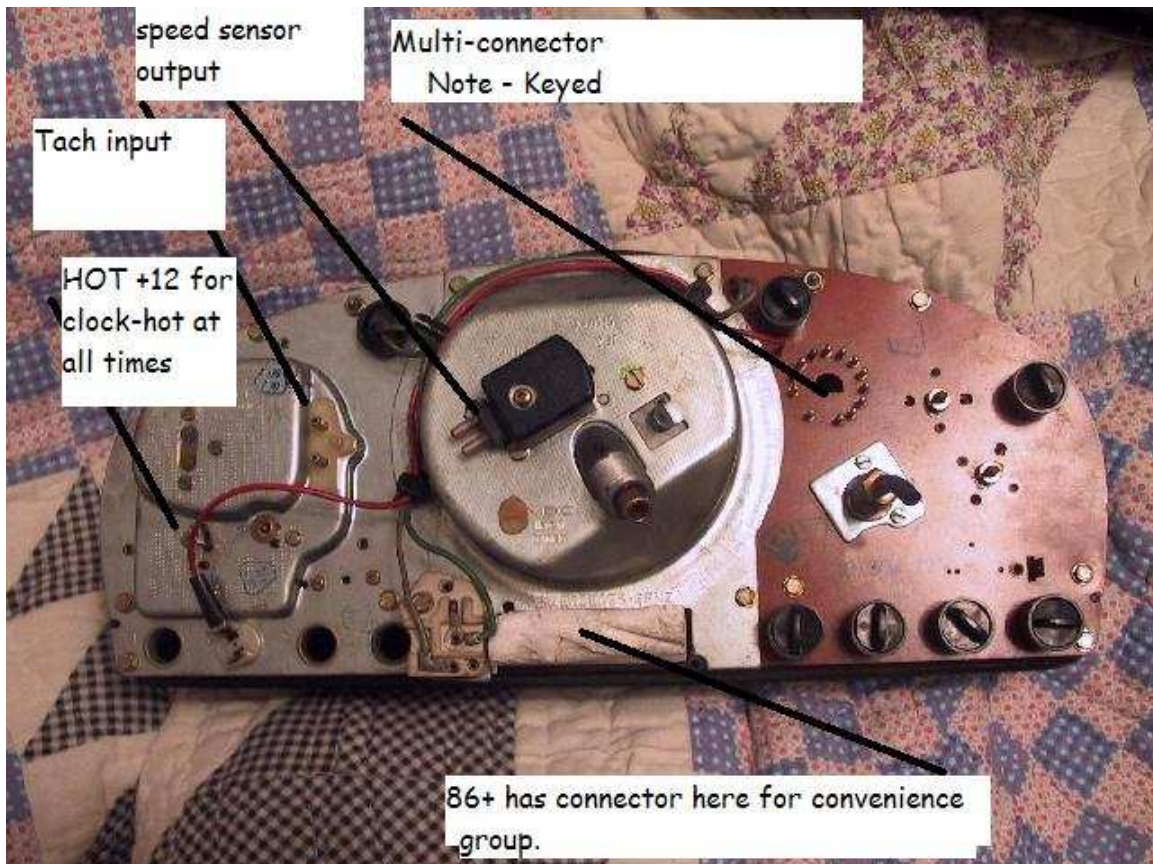
2. Gently **rock** the panel back and forth while pulling just until it gives. Beware of the cruise control (if so equipped) and the turn signal stalks. Do not attempt to entirely remove the panel yet; wires/cables/hoses need to be disconnected first. It is easier to work from the RIGHT side in my opinion.

Panel Disconnection

Older (pre-86) Models

On older models, there are two or three main electrical connections, and 1 or 2 cables for the speedometer and/or tachometer. There is also an oil pressure gauge that actually uses an oil hose. These must be disconnected. Do not strain or bend the speedometer/tachometer cables because they could be damaged and cause the gauges to be "jumpy" or to fail.

The oil hose may be old, delicate, and a leak or break while the engine is running could be disastrous to your interior. **So, remove these especially carefully.** You should put a towel on the car floor underneath, just in case. Use a 13mm wrench to hold the fitting on the gauge itself and loosen the oil fitting with a 10mm. You must then plug/bag the open oil line immediately because it could theoretically leak very, very dirty oil on your nice interior.





On older, pre-1986 cars with mechanical oil/speedometer systems, it may be desirable to work from behind the dash to remove these first. Consult the Mercedes manuals.

There are 5 main electrical connectors:

The round multi-pin connector

The convenience connector (86+)

The tachometer connector

The speedometer connector (electronic signal – this looks odd but simply pops off)

The clock connector (hot whether or not the car is on- this is why you disconnected the battery)

Be very careful with this connector. If you've left the battery connected (NOT recommended!), **this will be electrically HOT AT ALL TIMES WHETHER OR NOT THE KEY IS IN THE "IGNITION" POSITION.** Mine has had its insulation deteriorate and touching this to ground anywhere will at least blow a fuse and surprise you; worst case, you could get hurt or damage the wiring.

All of the above "wiggle" off.

There are also individual connectors for the lights on the right-hand side of the panel (86+ models). The wires are numbered to correspond to the dash, starting at 2 (1 is a plugin socket for the turn signal, and is not removed).

There is a vacuum connection to the economy gauge (86+), which wiggles off.

I have found it easier to work from right to left.

Panel Removal

Before you remove the panel, write down exactly what is stated on all the Idiot Light signals. You may have to transfer these from your old housing if they do not match.

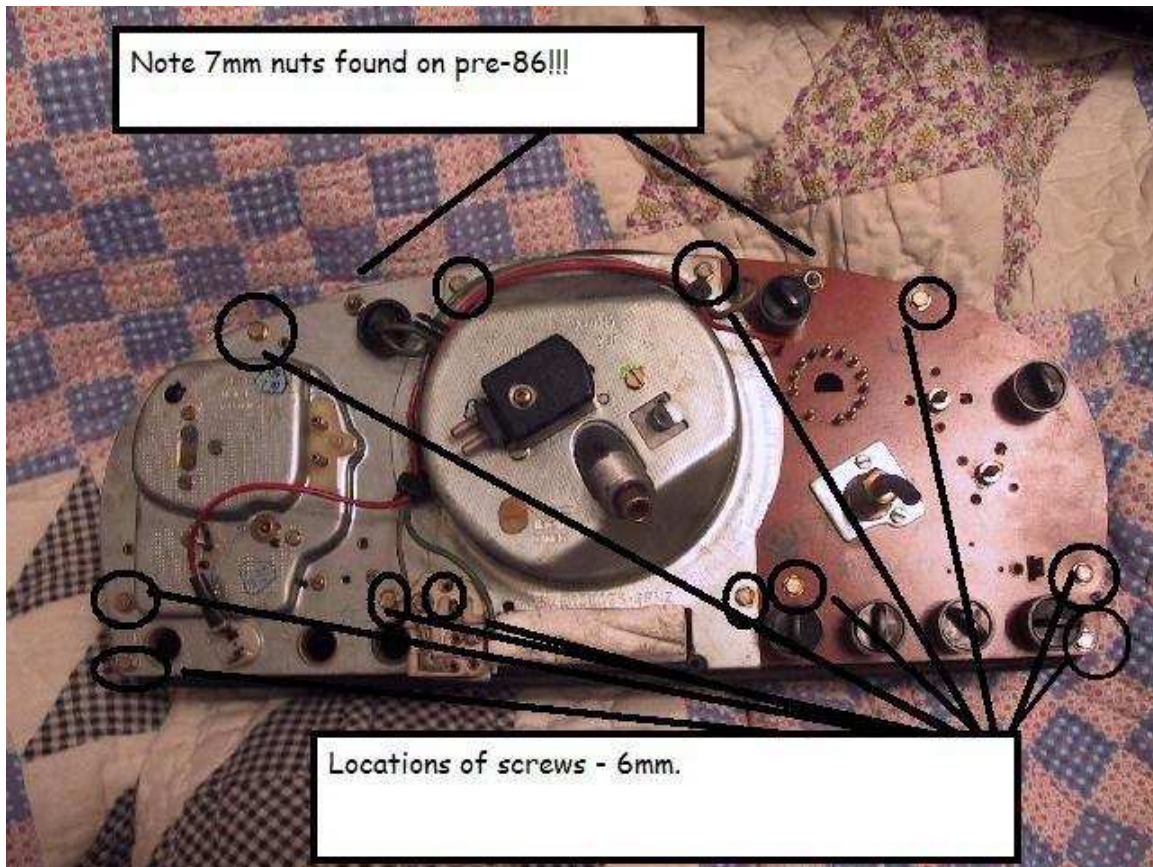
Remove the panel while avoiding the cruise/turn signal stalks.

You should lay a terrycloth towel large enough for two clusters down on a clean table, and place your new instrument cluster housing face down on this, along with the one you just removed.

Transferring Parts from Old To New Housing

Before proceeding, it is CRITICAL that you mark down the legends on the "idiot lights" on your original dashboard. Mixing these up with those from a different car could result in a safety hazard.

This would be a great time to replace the lamp or lamps you noted as dead or weak before removing the cluster.



Use a 6mm socket on a 6"+ extension. Remember, you are screwing parts out from and into plastic; tighten the screw only finger-tight without the ratchet. Overtorquing could result in breakage or stress.

VERY CAREFULLY CHECK the interior of the new housing for dust. In spite of my best efforts, it is likely that it contains some. Dust within the cluster will be very annoying and may lead you to do this job over (which you **not want to do**). Hold the cluster up to the light and thoroughly check with the brush provided.

VERIFY that the indicator lamp legends ("idiot lights") from your OLD panel match the NEW panel. If they do NOT, read the section "Indicator Lamp Plastic (Idiot Lights)" before proceeding.

If there are smudges or fingerprints, use ONLY (ONLY!!) a SOFT and CLEAN cloth (NOT A TERRYCLOTH) and Windex/Glass cleaner. Do not press while cleaning. See "polishing" for recommended inexpensive polishing cloths.

Do NOT touch or allow the bending of your instrument faces or their indicator needles.

Before proceeding, you might consider cleaning the instruments themselves (with the provided dust brush) or possibly the painting of the needles (see "Indicator Needle Painting").

- Remove the multi-gauge cluster screws first (all 6mm)
- Remove the screws holding the speedometer.
- Remove the screws holding the tachometer.
- Remove the one longer screw holding the rheostat (the dimmer) and remove it.

NOTE: On pre-86 gauges, the front of the instrument panel is held on by two nuts that pass through the multigauge and tach PCB's, as shown. Remove these 7mm nuts before proceeding. Do not lose the washers.

- Remove the multi-gauge cluster.
- Remove the convenience module (two very small Phillips screws)
- Remove the speedometer and tach/clock as an assembly (they are wired or tied together). These are placed on the new assembly. Note the shaft for the clock knob; this obviously must go through the hole.
- Install the multi-gauge cluster.
- Install the convenience module (86+) using the two small Philips screws.
- Install the rheostat.
- Replace all screws; remember that these should be finger tight and no more; also recall that the rheostat (dimmer) screw is LONGER.

Your car may or may not have a rubber gasket at the rear of the housing. Your new one provided by me may or may not have this installed. If it is not installed, transfer the gasket from your original housing to the new housing. It is a strip of rubber shaped to the housing and is not a continuous loop. It is held in place with double-sided adhesive. If it is NOT sticking when replaced, use SMALL amounts of gel-type superglue, NEATLY, to secure it. If this step is needed, wait 1 hour before reinstalling.

Replacement

The finish on the new cluster is sturdy, but not indestructible; do not bang it on the edges. Once installed, it should last a very long time. It might be a good idea to put a terrycloth on the steering column.

Working from left to right, reconnect:

- The vacuum gauge (newer models)
- Oil Gauge - 85 and earlier models- be very careful in making CERTAIN that this is properly seated and tightened. An oil leak in this area caused by distortion/damage to the (now 20 year old) hose or improper installation/tightening of the connector can cause a spectacular and uncleanable mess in your car's interior in a matter of moments! Again, *use the 13mm wrench to hold the brass fitting at the gauge while turning the 10mm hose fitting.* Do not rely on only the gauge to provide this strength; it could be damaged.

- The large multi-pin connector (it's keyed and will go in only one way). Be certain that it is entirely seated. Only a very tiny gap should exist between the PCB and the connector.
- The speedometer (on older models, a cable)
- The convenience module (86+) - note that although this is keyed, it IS possible to misconnect it. Look at the physical outline of the connector while installing. On earlier models, a block of foam is installed here, black face out towards the driver.
- The tachometer
- The idiot lights, going from left to right (from the front view). Note that on my car, these lights were all tagged with numbers corresponding to the places for them. On my car, the last "hole" is empty. Note that on 85 or earlier models, these were part of the PCB assembly and not loose bulbs and wires.

Check that your model didn't have any other wires or lamps.

Now, you are ready to reinsert the panel. Make certain that the wiring is dressed out of the way, and carefully and evenly reinsert it. Note that this is a friction fit. Do NOT over press it in; damage to the 16-30+ year old dashboard padding could occur. If it is slightly less than flush, it is seated properly.

Replace the plastic insulator ring (newer models). It will line up only one way. Use the three Philips screws.

Replace the steering wheel, noting the position of the wheel.

Torque the steering wheel nut/screw to the proper torque using a torque wrench. Brace the wheel with your legs/knees. Get another person to hold the wheel for you while you torque this. **Do NOT rely on the antitheft system to lock the wheel. You could damage it.**

From the Mercedes manuals:

Nut on steering wheel: 50nm (Newton-meters-multiply by ~0.75 to convert to ft-lbs)

Screw: 80 nm (Newton-meters-multiply by ~0.75 to convert to ft-lbs)

I would use blue Threadlocker on this, just in case.

Replace the airbag if so equipped using the hex or Torx screws. **DO NOT FAIL, DO NOT FAIL, to reconnect the connector to the airbag first!!!! It is keyed to fit one and only one way and you will feel it click in place. I do not have torque settings for these screws. Use reasonable, prudent judgment or consult other manuals.**

Replace any padding or emblems (pre-86 107's).

Test drive to check alignment of wheel, lighting, and gauge operation.

Extra Steps

Instrument Panel Disassembly

Filler Panel Removal/Replacement

The instrument panel may have an additional strip underneath, as a "filler". This is fastened to the panel with two-sided tape and uses locating pins for placement. Depending on the instrument panel provided to you, this filler may or may not be present on your woodgrain panel, and you will need to transfer it from your original panel.



To remove:

On a flat, padded surface (terrycloth towel), working from the REAR, use a WIDE knife and twist to separate. Work evenly across the length of the panel so as not to stress any particular spot.

The plate will pop off.

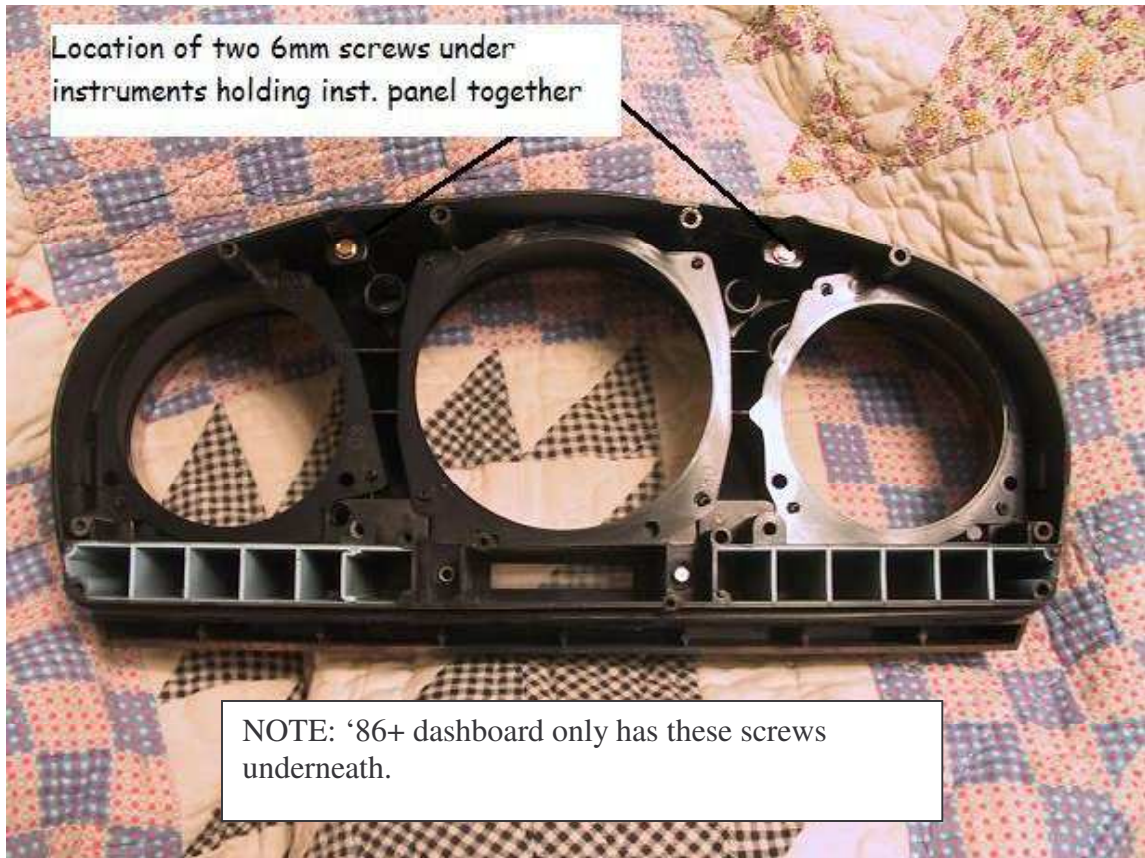
Keep the "glue" area clean.

To reassemble:

Reverse the steps. If the original glue is insufficient, use strapping tape to tightly connect the parts as shown on the front cover of this document. It is important to keep them tightly together so that they don't rattle. If they seem reasonably tight, the pressure exerted by installation should do the rest.

Indicator Lamp Plastic (Idiot Lights)

The indicator lamp plastic is held captive by the clamshell of the two black plastic pieces of the dashboard. It is assumed that you have already removed the gauges.



To disassemble:

1. Work on a clean mar-free surface like a towel. Small pieces can escape; make sure you can find them.
2. On 86+ dashboards, it is necessary to remove the gauges to expose the screws. Remove the two 6mm screws.

Remove as shown with the cluster face down; then, working with the cluster face up and bottom towards you, slightly separate the pieces. The indicators will loosen. Slide them out. If necessary, proceed to entirely separate the instrument cluster pieces. Be careful not to loosen or bang the instrument panel clear plastic.

On '85 or earlier dashboards, the PCB's that hold the instruments are integral to the attachment of the front panel. If you have removed the gauges, the two halves of the instrument cluster should easily disassemble at the seam.

Indicator Lamp Plastic Legends

On 86+ dashboards, the legends are marked on the translucent colored plastic behind the clear plastic. It is attached to the clear plastic with three plastic rivet-like clips. You may exchange these with the proper indicator assemblies, or you can swap them by removing the clips. Note that the plastic is delicate and irreplaceable. Proceed with caution. The rivets are removed with a sharp pointed object (a thin, sharp pencil, for example) from the front. **DO NOT BEND THE COLORED PLASTIC.**



If you will be reusing your original idiot light assemblies, see "clear instrument cover polishing" for the cleaning and polishing of these pieces.

Remember, ***it is crucial that one way or another, you wind up installing a dashboard with the proper lamp legends into your car!***

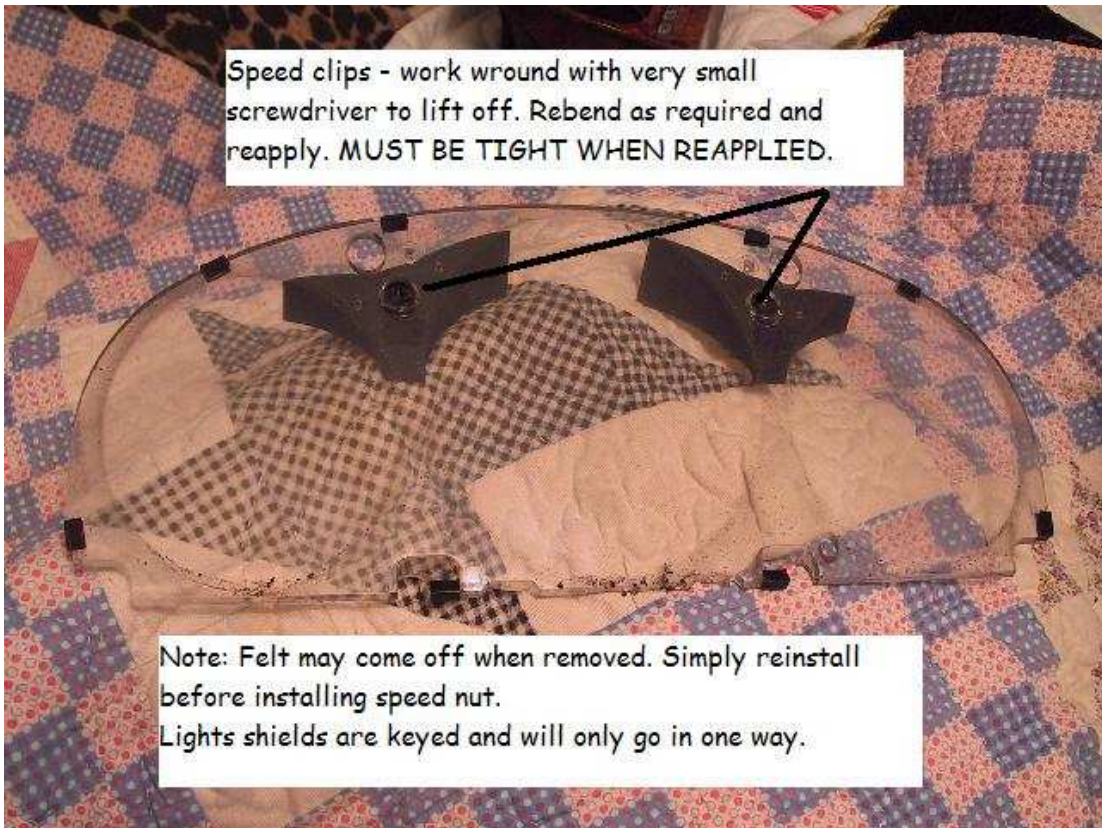
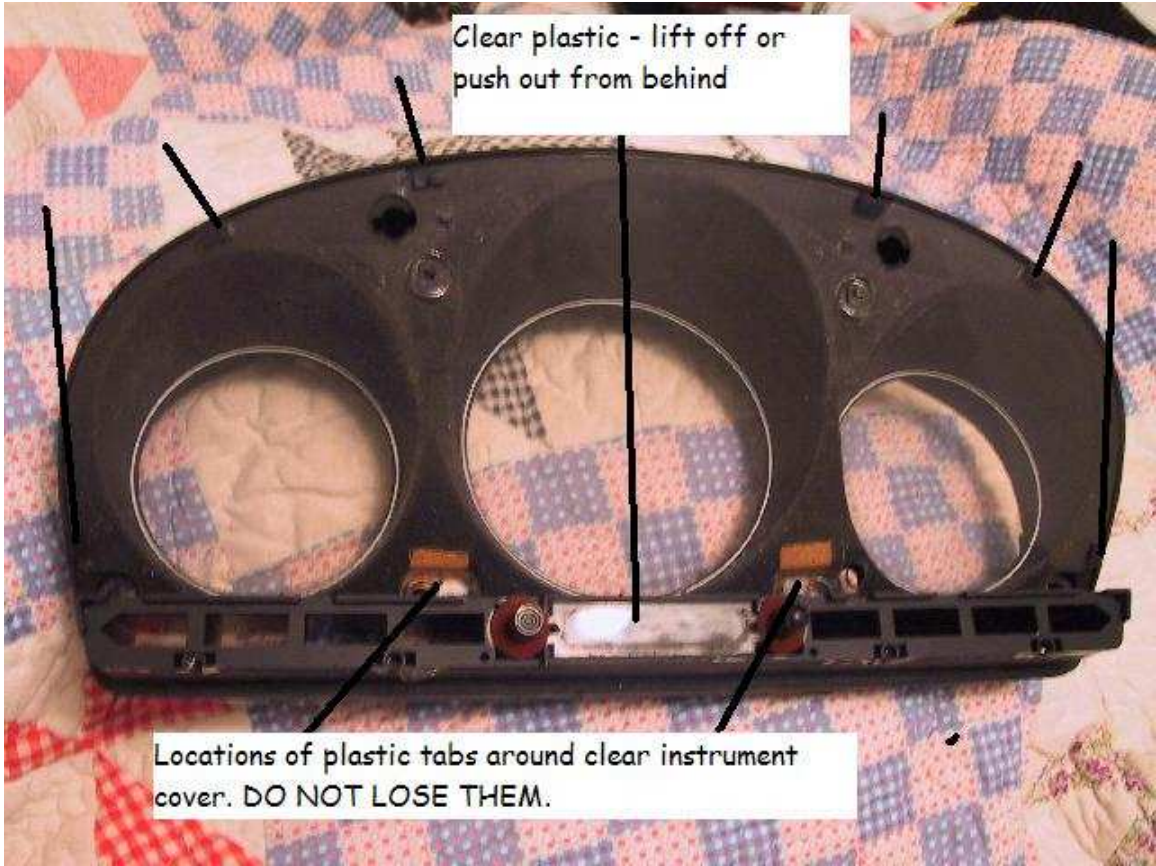
Note that on 86+ instrument clusters, the center plastic covers the convenience cluster module. On earlier cars, this is "blank" and is filled in with a piece of Styrofoam painted black on the front.

Clear Plastic Over Instruments

It is assumed that you are working in a clean area on a terrycloth towel or similar mar-free surface.

After separating the two black pieces of instrument housing and removing the idiot light plastic, carefully lift the clear instrument plastic. Note the black clips on the edges. Remove these and **DO NOT LOSE THEM.**

IF all you need to do is clean your plastic, you need do no more disassembly. If you need to polish it, you will need to remove the light shields. These are held in place with triangular speed clips. They are not easy to remove, but can be removed by working around the edges, spinning, and lifting with a very tiny screwdriver. Do not break the posts, or gouge the plastic while doing this. Do not lose the clips.



Reinstalling

After Cleaning/polishing (see below), thoroughly examine for cleanliness. Hold up to a bright light and look for smudges. It is very important to keep it as clean and dust-free as possible. Dirt and dust will irritate you greatly if you reinstall the instrument cluster dirty and/or dusty. Use the dust brush provided and see my comments about the type of cloth to use.

Replace the light shields, if removed. The clips will have lost some tension and slightly flattening them back to original shape with a pair of needlenose pliers will help (it helps if they are slightly concave with the tips pointing down). It is important that you secure these tightly and without any sign of looseness.

Replace the small clips around the plastic. Hopefully, you did not lose them. If you lost one, it isn't a big deal; if you lost two, a small piece of electrical tape will probably work as well. These serve an anti-rattle/squeak purpose.

Washing

At the very least, you should wash your instrument panel clear plastic. This plastic is very soft and will scratch with just your fingernail. The goal here is to remove all dirt and dust in a non-abrasive manner before further drying or dusting.

Initially run the panel under a sink with lukewarm water.

Using only dishwashing soap, liberally cover the panel and spread the soap all over with your hands.

Thoroughly rinse all traces of soap off of the plastic, again, using your now clean hands to rub off the soap.

Allow to dry. If you must use a cloth to dry it, the ONLY acceptable material to dry it with is a flannel type cloth. Period. It will otherwise be scratched. These are available for \$4.00 a bag at Wal-Mart, and I recommend them highly.

If you use a USED cloth, it should be fresh out of the washer and dryer.

Hold the plastic to the light and check for dust/dirt/unacceptable scratches.

Polishing

Even after polishing, you may notice marks (probably circular) around where the plastic was exposed. These are marks left by grinding dust into the plastic when cleaning the instruments. The following technique will remove these, as long as they are not serious; even if it does not remove them all, it will improve the appearance greatly. Tiny scratches are not visible when the unit is installed. Note that it is highly unlikely that, unless mishandled, that the BACK of the plastic is scratched. You should note which side is the front and which is the back.

The polish I use is Maguier's PLASTX, which I picked up at Advance Auto.

Work surface and PLASTX polish. There may be others that work, but I know that this does.



The ONLY cloth you should use is a flannel type cloth. Period. It will otherwise be scratched worse than it already is. These are available (the yellow ones) for \$4.00 a bag at Wal-Mart, and I recommend them highly. Everything (including YOU) must be clean and dust-free.

If you use a USED cloth, it should be fresh out of the washer and dryer.

Place the plastic on a terrycloth towel (clean, and fresh from the washer/dryer).



Use polish sparingly. EVERYTHING MUST BE CLEAN. You are polishing correctly if the plastic/your finger is getting warm; "squeaking" is a good sign!

Use SPARING amounts of polish; apply to the plastic.

Rub with a finger or fingers over the flannel cloth. Press hard. If you are doing it correctly, the plastic and your fingers should become warm through the cloth. On a microscopic scale, you are actually melting the plastic back in on itself in addition to removing the upper layer of dead, oxidized plastic.

Use a "new" spot on the fabric when reapplying polish and continue until the scratches are sharply reduced and/or eliminated. Clean off excess polish with another flannel cloth and hold to a bright light. Perfection is desired, but not absolutely required. Work especially around the circumference of the gauges, where it is likely that dirt had been ground in and scratched the plastic.

It IS possible to remove more serious scratches and gouges with a buffing wheel and plastic compound, but this is best left to experienced persons and is not described here.

Rear Plastic Cleaning/Maintenance

This is rugged, and you may wash it under a sink using dishwashing soap; dry with a flannel or soft cloth only. If you immerse it in water, you should lubricate the odometer reset/dimmer knob immediately with oil. Lubricating these areas, period, may be a good idea.

Note that there is a tiny clear plastic window over the "convenience indicators" or the foam block. Do not lose this; it is held in place only with pegs. This, too should be cleaned and/or polished with the other clear plastic.

Gauge Indicator Painting

You may not know this, but the color of your gauge needles was not yellow when the car was new - it was a bright orange. This may be a good opportunity to repaint your needles. It is likely that some needles have faded more than others. My dash (shown on page 1) has had the gauge needles repainted.

Hobby stores carry Testor's signal orange, which is not exactly original but is very close. Also obtain thinner, and some small brushes.

If you are sloppy, you might consider masking the gauges with a cut-out card for the needle hub and stalk. I didn't do this.

Shake the paint, pour into the cap, thin slightly with the thinner, and mix.

Paint the appropriate needles NEATLY. Don't get any on the hub or on the gauge face (see masking, above). This is especially important on the clock hands. You can stop 1/2 mm or so from the hub, and if you are neat, no one will notice this.

A caution: Do not apply paint too thickly. On gauges with "stops" like the electrical oil gauge on my '86, I developed an annoying problem. As you know, paint actually can take weeks or even months to become "completely" dry. The needle would stick on the 0 stop and I spent two weeks of nail-biting wondering if I was driving around with no oil pressure (after driving around a bit or going over a bump, it would loosen up and pop up to "3". Eventually, the heat of the summer hardened the paint to the point where it did not stick.

Bottom line is, paint near the stops as little as possible, particularly on an electronic gauge.