

Replacement Tach Board Manual

67-74 Dodge and Plymouth

Cars that use electronics
Internal to the tachometer.

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Rev8

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67-74 Dodge & Plymouth Tach board (Rev 7)

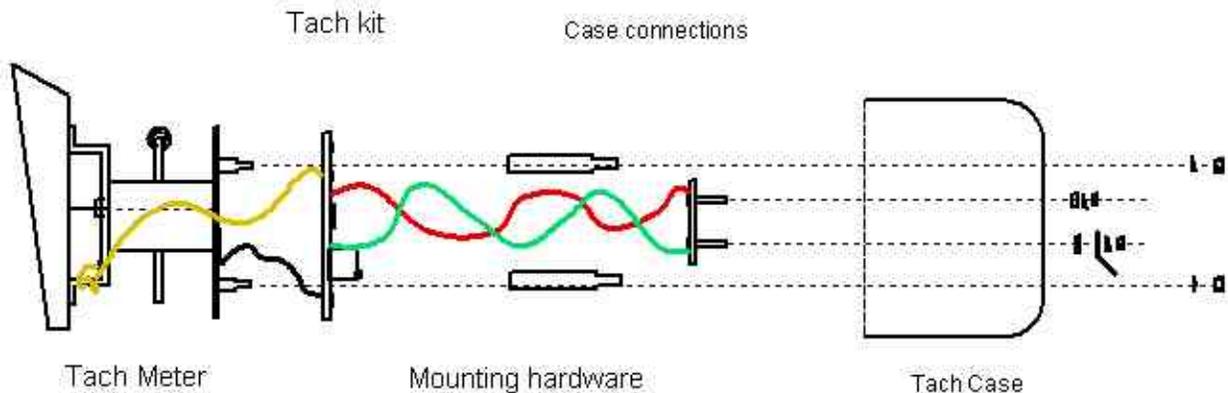
Introduction:

This board replaces the original tachometer driver board in the 67-74 Dodge and Plymouth cars that use electronics internal to the tachometer. The board is designed to fit inside the original tachometer in the same place where the original board was located.

The board has 4 holes in it for the wires. These are the connections:

- +12V – This hole should be connected to a wire that is hot when the ignition is turned on.
- METER – (GND) – This hole should be connected to one of the wires of the tach meter movement. In all the meters that I have seen, the wire on the meter movement closest to the tach board should be connected to the GND pin.
- POINTS – This hole should be connected to the minus side of the coil, or if you are using a MSD ignition it should be connected to the TACH output pin of the MSD ignition.
- METER+ – This hole should be connected to one of the wires on the tach meter movement. In all of the meters that I have seen, the wire on the meter movement closest to the face of the tach should be connected to the METER+ hole.

Your tach sending-unit was adjusted at the factory to read properly on a mopar tach. However, each meter is slightly different. We recommend that you adjust the tach sending unit after installing it on the back of the meter movement. We provide two potentiometers on the board to assist you in this effort.



Installation:

In order to install the board in an original tachometer, do the following:

- 1) Remove the instrument panel from the car.
- 2) Remove the tachometer from the instrument panel. Two or three screws usually hold it in.
- 3) Take the nuts off the back of the tach. The can on the back of the tach will now come off, allowing you to see the original tach board.
- 4) The original tach board is held in place with either three standoffs (68-74), or two rivets (67 charger). If it is held in place with three standoffs, remove the standoffs. If it is held

in place with two rivets, drill out the rivets. Do not lose the small spacers that held the tach board away from the metal mounting plate when drilling out the rivets.

- 5) Cut the wires that are connected to the old circuit board. Cut them as close to the board as possible.
- 6) Strip back about ¼ inch of insulation on the end of the 4 cut wires. When stripping back the two wires connected to the meter movement, use some needle nose pliers to hold the wire so that you do not put any force on the needle spring holders that the wires are soldered to.
- 7) METER+ – Connect this to the meter movement wire closest to the front of the meter. You will use a soldering iron to solder the wire to the tach board, coming up from the back side of the tach board (the side with no components)
- 8) +12V – This wire connects from the +12V signal coming from the car. This wire comes from the back of the can. On a 67 charger, this wire is a red wire, which is connected to a long round stud. On a 70-74 Ebody car, this is usually a yellow wire. On all tachs, this wire connects to the long stud, and the wiring harness in the car has a slip on round terminal. **IT IS EXTREMELY IMPORTANT THAT YOU MAKE SURE THAT THE +12V WIRE THAT YOU JUST SOLDERED IN DOES NOT CONTACT ANY METAL ON THE TACH. THERE IS A BRASS SCREW ON EBODY TACHS THAT IS VERY NEAR THIS SOLDER POINT WHEN THE BOARD IS INSTALLED.** You may need to cover the brass screw with a piece of black tape and/or trim the back side of the tach board after you solder the wires on.
- 9) POINTS – This is the other wire from the back of the tach can it is the short stud that has a spade terminal attached to it. On a 67 charger, this wire is green, and on a most 70-74 Ebody tachs this wire is green.
- 10) METER- – Connect this to the meter movement wire closest to the tach board. Make sure that no wires are touching anything except the 4 holes you solder to.
- 11) Mount the tach board back onto the meter, either by screwing down the original 3 standoffs (68-74), or use two small bolts with nuts to replace the rivets (67 only). It would be a good idea to put locktite on the small bolts to make sure they can't vibrate loose. Make sure that when you tighten down the 3 standoffs that you don't accidentally catch any of the wires under the tach board and short them to ground.
- 12) Before you put the back of the tach back on, you should hook it up to your car and adjust the meter so that it reads 4000 RPM and 1000 RPM properly. This must be done because each tach meter movement is slightly different. See the end of the manual to read about how to make this adjustment. Note that the meter movement **MUST** be grounded to the frame ground of the car, or the tach board won't work. You may have to run a jumper wire from the frame of the car to the metal of the meter movement frame to make the ground connection while adjusting the tach board. I usually will run three jumper wires from the tach as follows:
 - a) The case of the tach to the case of the alternator to get a good ground
 - b) The long stud on back of the tach to the large +12V terminal on the alternator (Be very careful not to allow this jumper to touch the car or the case of the tach, as it will spark and cause problems if you let it touch ground).
 - c) The short stud on the back of the tach with the spade terminal should be jumped to the minus side of the coil (unless you have a MSD ignition, in which case it should be jumped to the MSD tach output).

After hooking up these three jumpers, and starting the car, then the tach needle should move as you rev up the motor.

- 13) Put the back of the tach back on the meter. If you have a volt/Ohm meter available, this would be a good time to check to make sure that you have not shorted either of the studs on the back of the tach to the tach case. Put the Volt/Ohm meter onto the continuity setting (buzzer), or on the 200 Ohm setting. Measure between the long stud and the tach case and you should get no continuity (or higher than 200 Ohms). Now do the same between the short stud and the tach case. If either check shows a short, then open the tach case back up and make sure that you did not catch one of the wires under a standoff, pinching the wire and shorting it to the tach case.
- 14) Put the tach back into the instrument panel and put the instrument panel back in the car.
- 15) Start your engine and test your new tach board!

ADDENDUM for 67 console tach only:

If you have a 67 console tach, you will find that the board is held on with 2 standoffs instead of 3. Also, there are 6 wires total instead of 4. You will solder the brown ground wire onto the large hole on the edge of the board that has tin plating around the hole, so that the tach board will have a good ground. Here is the correct color code for the wires coming into this tach:

Purple....Points
Green....+12V
Brown....Ground
Orange...lighting

The other two wires go to the meter movement and are no different than all the other tachs mentioned in this manual.

ADDENDUM for 71-74 AMC AMX tic-toc-tach only:

This tach is similar to the mopar tachs, except the back of the tach housing is held on by three screws instead of three nuts. The studs that connect to +12V and the POINTS are on the side of the housing, and you connect these two studs to the tach just the same as you would a mopar tach.

Adjustment:

The 4000-RPM ADJ pot adjusts the gain of the tach board. If your tach is reading too low or too high at upper RPM's, but is correct when idling, you may need to change the 4000-RPM ADJ pot using a small screwdriver.

The 1000-RPM ADJ pot is used to adjust the lower reading of your tach. If your idle reading is always too high or too low, you can try changing the 1000-RPM ADJ pot using a small screwdriver. The 1000-RPM ADJ pot can only bring the lower reading of the tach up, it cannot take the lower reading down.

If you try to adjust the tach board while it is connected to the wiring harness and the engine is running, make sure that you do not allow any of the circuit board wires or components to touch anything metal as you could destroy the board. Make sure that the unit has a good ground when adjusting it as well, using a small wire connected from the brass case to a good ground (such as a screw on the dash).

The sequence that we follow is:

- 1) Turn the 1000RPM ADJUSTMENT all the way counterclockwise for 15 turns. After 15 turns, the pot will just stay at the no effect (0) setting.
- 2) Now run the engine at 4000 RPM and set the 4000-RPM ADJUSTMENT so that the tach reads 4000 RPM. If you are uncomfortable running your engine this high, you can choose to adjust the tach at 3000 or 2000 RPM.
- 3) Now run the engine at 1000 RPM. On most tachs, the meter will read 1000 RPM and you will not have to move the 1000 RPM adjustment at all. If the tach is reading too low at 1000 RPM (or idle), then you can use the 1000-RPM ADJUSTMENT to bring the reading up.
- 4) If you did move the 1000 RPM adjustment, then you need to go back to step 2 and repeat if necessary.
- 5) If the 1000 RPM reading of the meter is too high, then you may be able to fix this by very gently moving the two springs on the meter movement in the direction that will make the needle go towards zero. This will put more force on the needle, which will make the needle read lower at low RPM. After moving the springs, you will need to adjust the 4000 RPM adjustment pot again as in step 2.

We use a dwell/tach meter in order to know what the motor RPM is. I have also noticed that older tachs are a little sticky, and it is helpful to tap the tachometer case after each adjustment to make sure the meter is reading correctly. Another good tool to use is a digital timing light with RPM readout.

If your tach is extremely sticky, you may need to loosen the jewel adjustment screw on the meter movement. This will allow the needle to freely return to zero and to not stick.

Troubleshooting:

If your tachometer does not work after installing the board, do not panic. Each tachometer board was tested at the factory and is known to work. Here are some things you can check:

- 1) Are all four of the wires securely soldered to the board? You can gently pull on each wire and it should not move.
- 2) Is the case of the tach grounded? You can try running a wire from the outside of the case to a good ground and see if the tach starts working. You can check from the case to a good ground using a ohmmeter
- 3) Is the tach itself good? You can put some voltage on the tach to check it, but do not leave it on the tach. We will sometimes poke a 12V wire onto the tach wire very quickly (and quickly pull it off) and see if the tach needle moves. If it does not move the tach itself is

bad. If you leave 12V on the tach for more than 1 second or so you could fry the tach. Note that you must have the other meter movement wire grounded when you do this test. It is also possible that you connected the two meter wires up backwards, in which case the tach meter movement will try to move the needle under 0 RPM.

- 4) Is the point's signal getting from the coil to the D (distributor) wire? You can use a cheap voltmeter to check continuity from the minus side of the coil to the D (gray) wire on the can. You should see an AC voltage on this pin when the engine is running.
- 5) Is the tach sending-unit getting +12V when the engine is running? You can use a voltmeter or test light to see if the +12V wire is getting 12V.
- 6) Is the METER+ wire connected to wire on the front of the tach meter movement? You can check this with an ohmmeter.
- 7) Is the wire on the meter movement closest to the tach board connected to the hole in the tach board labeled METER-? Note that METER- is also connected to the TACH ground, which is the standoff hole that has tin plating around it. You can check continuity between the METER- hole and the case of the tach, and you should get close to zero Ohms.
- 8) Is the tach sending unit putting out a voltage on the METER+ wire when the motor is running? If it is not putting out a voltage, then it may have a bad ground, it may not be getting +12V, or it may not be getting a good signal from the coil. One other possibility is that the tachometer wire could be grounded or the tach is shorted out. The tach sending unit should put out voltages similar to this when the engine is running:

Tach voltage versus tach reading

| Voltage | Tach Reading in RPM |
|----------------|----------------------------|
| 0-0.5 | 0 |
| 0.885 | 1000 |
| 1.4 | 2000 |
| 1.9 | 3000 |
| 3 | 4000 |
| 3.9 | 5000 |