



Gauge Solution Installation Instruction Manual

* VDO Gauges / Mitsubishi Lancer EVO 8 & 9 *

The following guide contains guidelines, tips and tricks for installing your 42 gauge solution. Note the index below to begin!

As always, read all instructions prior to installation. Do not deviate from basic wiring or mounting instructions. Always disconnect battery ground before making any electrical connections. If in doubt, please email 42 Draft Designs sales@42draftdesigns.com or seek professional help.

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EVO Triple Gauge Panel Installation Instructions

Tools Recommended: Phillips Head Screwdriver

1. Remove A/C and heater knobs by pulling them directly outward from the center console. Remove the two Phillips head screws located under the two outside knobs. To remove center console, evenly pry the console away from the dashboard. It is held in place with many snap-in clips.
2. Remove radio by unscrewing the 4 screws holding it to the surrounding frame. Pull the radio directly outward being careful not to yank out the factory wiring. Unplug the factory radio wiring and antenna. Now would be a good time to install Mitsubishi's radio relocation kit. Follow any instructions included with the factory kit and re-install your radio in its new location.
3. With the center console removed, install gauge panel from the back of the console. The gauge panel will only install with the notches upwards, clearing the 2 top clips that hold the console to the dash.
4. Install gauges in the panel, noticing that the bezels will overhang the front of the gauge panel and latch the panel into the console. Install gauge spin-locks or mounting brackets to fasten the gauges and panel to the center console. In many cases, the mounting U brackets may be too long to fit. If this is the case, trim mounting brackets accordingly.
5. With gauge wiring completed and tested, re-install the assembled center console and gauge panel by snapping it into place. Re-install the two Phillips head screws and re-attach A/C & heater knobs.

VDO Gauge Wiring – EVO Specific Tips & Tricks

Always test your connections using a test light or multimeter before connecting any wires! Disconnect battery ground before making any connections! Your car may differ from the given instructions!

Lighting Circuit

When wiring the lighting circuit of your gauges, it's best to wire them into your car's existing lighting circuit. This way the gauges will illuminate and dim with the rest of the dash. To do this, you'll need to tap into the dimmer switch.

The EVO dimmer switch wiring harness consists of 3 wires. The black/yellow wire is ground, the black wire is incoming power and the green/white wire is outgoing power. Tap the green/white wire using a wiretap or by stripping a small portion of the wire and soldering in your power wire. Using 42's solution wiring kit lighting harness you'll be connecting the red wire to the green/white wire of the dimmer switch. You must also use the ground on the dimmer switch to power your gauge lighting. Connect the black wire from your lighting harness to the black/yellow wire on the dimmer switch by using a wire tap or solder.

Switched 12v Power

To power your gauges you'll need a switched 12 volt source. When connected to the correct power source your gauges will be active only with the ignition on and your battery will not be drained.

In the EVO, there are a few options to work with. If you would like to use an add-a-circuit to take power from a switched fuse, there are two fuses to work with. Fuse #10 and fuse #12 will provide you with switched 12v power when using an add-a-circuit.

If you would like to tap a more permanent source, there is an easily accessible wire to tap on the fuse block. With all the covers removed from the fuse panel, locate the 3-pin connector at the very bottom left-hand corner of the fuse panel. This connector (C-218) feeds the roof wiring harness. There are 3 heavy gauge wires on this connector wrapped in black shielding. From left to right – black, red w/ white stripe, and black/white. The center wire, red w/ white stripe can be tapped for switched 12v power. To tap this wire, use a wiretap or strip a small portion of the wire and solder in your power wire.

Ground

Ground is a simple connection in the EVO. Because they use a common chassis ground, all you have to do is locate a screw that connects to the chassis. When tapping into the dimmer switch and fuse panel, you will most likely remove the lower dash panel. The metal structure which the lower dash panel bolts to is a perfect location to ground your gauge

wiring. Simply remove one of the screws in the structure and ground your wire using a ring terminal.

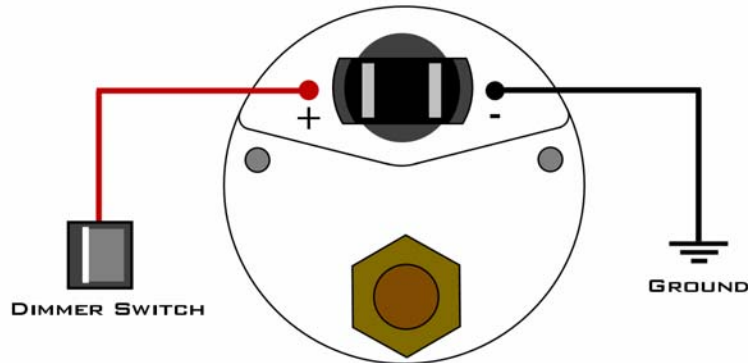
Firewall

In the EVO there is an empty grommet which is perfect for running wires and tubing into the engine bay. It is gray in color and located in the engine bay directly next to the passenger side strut tower. In the cabin, this grommet is easily accessible by removing the glove box.

Boost Gauge Tap

There are a variety of locations in the EVO engine bay to tap for a boost gauge. For the most part, any vacuum line that originates on the intake manifold can be tapped. We recommend tapping the line which feeds the diverter valve. This line starts at the intake manifold as a soft rubber vacuum line. As it travels over the engine, the line meets with a hard metal tube. We recommend tapping the soft line close to the intake manifold.

VDO Gauge Wiring – Boost Gauges



Tools & Materials Required:

42 Draft Designs Wiring Kit
Wire Cutters
Wire Strippers
Terminal Crimper
Soldering Iron or Wire Taps

Always test your connections using a test light or multimeter before connecting any wires! Disconnect battery ground before making any connections! Your car may differ from the given instructions!

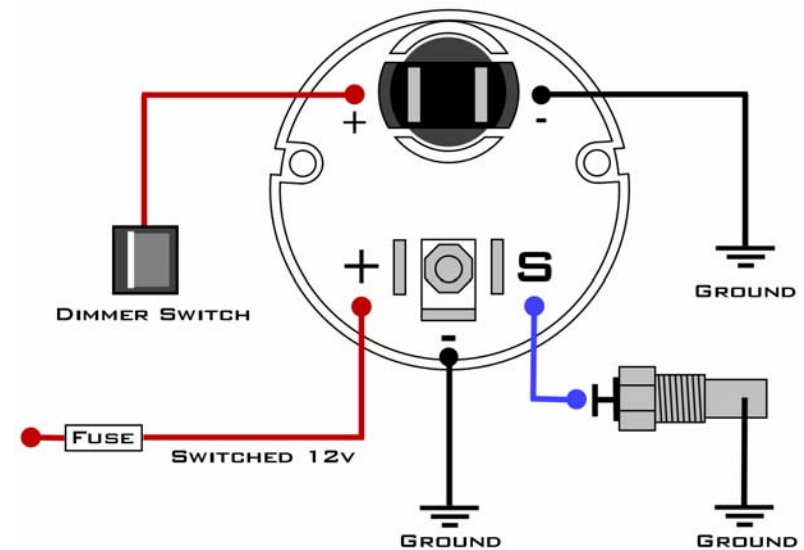
To begin, remove any interior panels necessary to access your dimmer switch and ground. Route the 18 gauge lighting wire from your dimmer switch to the gauge. Connect the 2 pre-crimped spade connectors to the light socket of the gauge and install your bulb or LED.

Locate the output wire on your dimmer switch and strip the insulation from a ¼" section. Connect the red wire from your 42 wiring harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires. Locate the ground wire on your dimmer switch and strip the insulation from ¼" section. Connect the black wire from your wiring harness using a wire tap or solder.

With both wires connected and bulb installed, turn on the vehicle's lights and test the gauge lighting. If using an LED, be sure to check for polarity. If the LED doesn't light, remove and rotate the bulb 180°.

For tubing kit instructions see pages 14-15

VDO Gauge Wiring – Oil Temp & Water Temp Gauges



Tools & Materials Required:

42 Draft Designs Wiring Kit
Wire Cutters
Wire Strippers
Terminal Crimper
Soldering Iron or Wire Taps

Always test your connections using a test light or multimeter before connecting any wires! Disconnect battery ground before making any connections! Your car may differ from the given instructions!

To begin, remove any interior panels necessary to access your dimmer switch, 12v power, and ground. Route the 18 gauge lighting wire from your dimmer switch to the gauge. Connect the red and black wires to the light socket of the gauge using female spade terminals. Install your bulb or LED.

Locate the output wire on your dimmer switch and strip the insulation from a ¼" section. Connect the red wire from your 42 wiring harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires. Locate the ground wire on your dimmer switch and strip the insulation from ¼" section. Connect the black wire from your wiring harness using a wire tap or solder.

Locate a suitable common ground and connect the gauge ground using the included ¼" ring terminal. Be sure to strip back enough wire and securely crimp. Connect the gauge ground wire to the gauge.

Locate your switched 12v source and connect the positive gauge wire using a wire tap or soldered connection. Be sure to use an inline fuse of 10amps or greater on any positive power source. Connect the positive wire to the gauge using a female spade connector.

Locate an empty grommet in your firewall and route the sender wire into the engine bay. Connect the sender wire to the gauge using a female spade connector. With sending unit installed, connect the sending unit wire using the appropriate terminal.

With all wires connected and bulb installed, turn on the vehicle's lights and test the gauge lighting. If using an LED, be sure to check for polarity. If the LED doesn't light, remove and rotate the bulb 180°. Start the engine to power the gauge and test the unit.

Troubleshooting

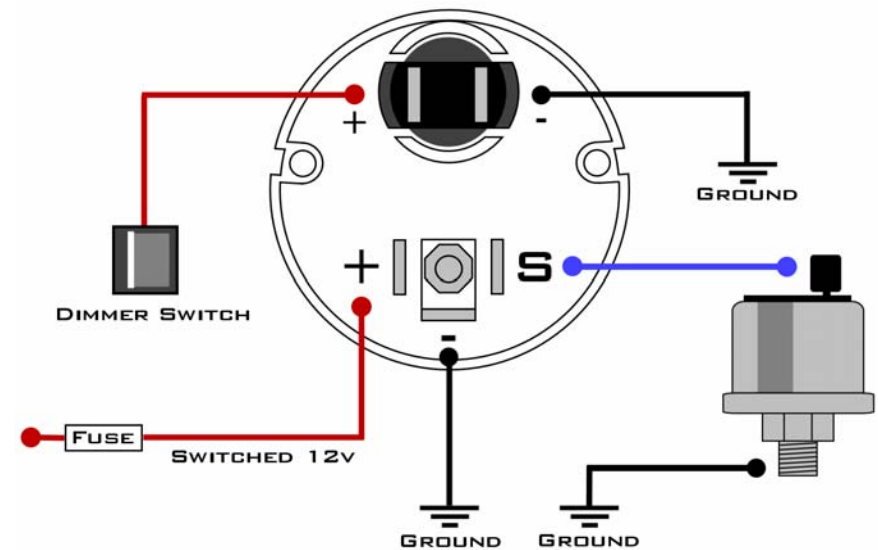
Gauges may be installed without the engine sensors connected. A VDO temperature gauge will show no reading if the sending unit is not installed. If the needle pegs to the right when under power, the sending unit wire has been shorted to ground. The wire connections on the back of the gauge could also be reversed or backwards. If the gauge shows little or erratic readings, be sure the temperature sender is well grounded to the engine block through the threads.

For specific instructions regarding sending units see the following pages:

EVO Oil Sender Placement 16

Water Temp Sending Units – 17

VDO Gauge Wiring – Oil Pressure Gauges



Tools & Materials Required:

- 42 Draft Designs Wiring Kit
- Wire Cutters
- Wire Strippers
- Terminal Crimper
- Soldering Iron or Wire Taps

Always test your connections using a test light or multimeter before connecting any wires! Disconnect battery ground before making any connections! Your car may differ from the given instructions!

To begin, remove any interior panels necessary to access your dimmer switch, 12v power, and ground. Route the 18 gauge lighting wire from your dimmer switch to the gauge. Connect the red and black wires to the light socket of the gauge using female spade terminals. Install your bulb or LED.

Locate the output wire on your dimmer switch and strip the insulation from a ¼" section. Connect the red wire from your 42 wiring harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires. Locate the ground wire on your dimmer switch and strip the insulation from ¼" section. Connect the black wire from your wiring harness using a wire tap or solder.

Locate a suitable common ground and connect the gauge ground using the included ¼" ring terminal. Be sure to strip back enough wire and securely crimp. Connect the gauge ground wire to the gauge.

Locate your switched 12v source and connect the positive gauge wire using a wire tap or soldered connection. Be sure to use an inline fuse of 10amps or greater on any positive power source. Connect the positive wire to the gauge using a female spade connector.

Locate an empty grommet in your firewall and route the sender wire into the engine bay. Connect the sender wire to the gauge using a female spade connector. With sending unit installed, connect the sending unit wire using the appropriate terminal.

With all wires connected and bulb installed, turn on the vehicle's lights and test the gauge lighting. If using an LED, be sure to check for polarity. If the LED doesn't light, remove and rotate the bulb 180°. Start the engine to power the gauge and test the unit.

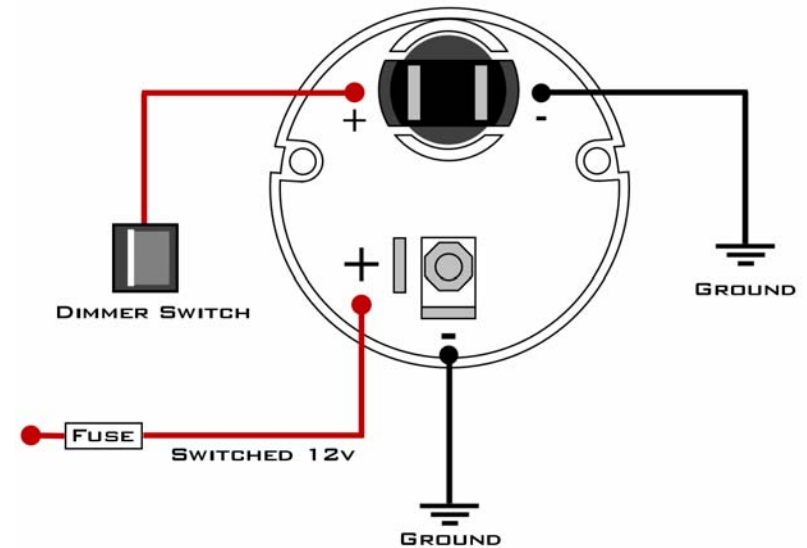
Troubleshooting

Gauges may be installed without the engine sensors connected. A VDO pressure gauge will show max reading if the sending unit is not installed. If the needle shows no reading when under power, the sending unit wire has been shorted to ground. The wire connections on the back of the gauge could also be reversed or backwards. If the gauge shows little or erratic readings, be sure the pressure sender is well grounded to the engine block through the threads.

For specific instructions regarding sending units see the following pages:

EVO Oil Sender Placement 16

VDO Gauge Wiring – Voltmeters



Tools & Materials Required:

- 42 Draft Designs Wiring Kit
- Wire Cutters
- Wire Strippers
- Terminal Crimper
- Soldering Iron or Wire Taps

Always test your connections using a test light or multimeter before connecting any wires! Disconnect battery ground before making any connections! Your car may differ from the given instructions!

To begin, remove any interior panels necessary to access your dimmer switch, 12v power, and ground. Route the 18 gauge lighting wire from your dimmer switch to the gauge. Connect the red and black wires to the light socket of the gauge using female spade terminals. Install your bulb or LED.

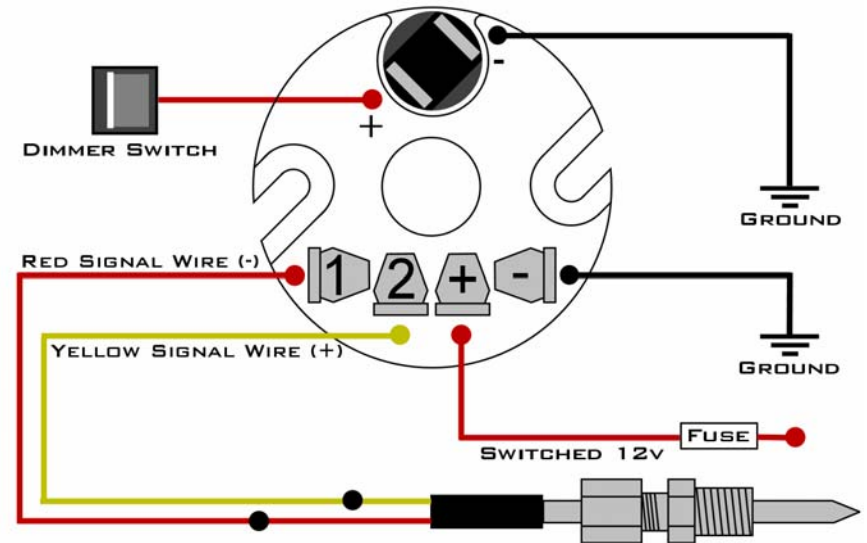
Locate the output wire on your dimmer switch and strip the insulation from a ¼" section. Connect the red wire from your 42 wiring harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires. Locate the ground wire on your dimmer switch and strip the insulation from ¼" section. Connect the black wire from your wiring harness using a wire tap or solder.

Locate a suitable common ground and connect the gauge ground using the included ¼" ring terminal. Be sure to strip back enough wire and securely crimp. Connect the gauge ground wire to the gauge.

Locate your switched 12v source and connect the positive gauge wire using a wire tap or soldered connection. Be sure to use an inline fuse of 10amps or greater on any positive power source. Connect the positive wire to the gauge using a female spade connector.

With all wires connected and bulb installed, turn on the vehicle's lights and test the gauge lighting. If using an LED, be sure to check for polarity. If the LED doesn't light, remove and rotate the bulb 180°. Start the engine to power the gauge and test the unit.

VDO Gauge Wiring – EGT Gauges



Tools & Materials Required:

- 42 Draft Designs Wiring Kit
- Wire Cutters
- Wire Strippers
- Terminal Crimper
- Soldering Iron or Wire Taps
- Phillips Head Screwdriver
- Small Adjustable Wrench

Always test your connections using a test light or multimeter before connecting any wires! Disconnect battery ground before making any connections! Your car may differ from the given instructions!

To begin, remove any interior panels necessary to access your dimmer switch, 12v power, and ground. Route the 18 gauge lighting wire from your dimmer switch to the gauge. Connect the red and black wires to the light socket of the gauge using female spade terminals. Install your bulb or LED.

Locate the output wire on your dimmer switch and strip the insulation from a ¼" section. Connect the red wire from your 42 wiring harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires. Locate the ground wire on your dimmer switch and

strip the insulation from ¼” section. Connect the black wire from your wiring harness using a wire tap or solder.

Locate a suitable common ground and connect the gauge ground using the included ¼” ring terminal. Be sure to strip back enough wire and securely crimp. Connect the gauge ground wire to the gauge.

Locate your switched 12v source and connect the positive gauge wire using a wire tap or soldered connection. Be sure to use an inline fuse of 10amps or greater on any positive power source. Connect the positive wire to the gauge using a female spade connector.

Locate an empty grommet in your firewall and route the thermocoupler wire into the engine bay. Connect the red and yellow thermocoupler wires to the gauge using the included ¼” female spade connectors. Connect the red wire to the terminal labeled 1 and the yellow wire to terminal 2 accordingly.

DO NOT CUT the thermocoupler wire to length. Doing so will result in altered temperature readings. In the engine bay, connect the thermocoupler wire to the probe using the included hardware. Be sure to connect red – red and yellow – yellow. Using a wire tie, be sure the exposed connections do not short out on any metal in the engine bay.

With all wires connected and bulb installed, turn on the vehicle’s lights and test the gauge lighting. If using an LED, be sure to check for polarity. If the LED doesn’t light, remove and rotate the bulb 180°. Start the engine to power the gauge and test the unit.

Troubleshooting

Be sure the sending unit connections are correct. If the red and yellow signal wires are reversed the gauge will show no reading. Also, be sure the screw terminal connection between the sending unit and the thermocoupler does not touch any metal in the engine bay and short to ground.

DO NOT CUT the thermocoupler wire to length. Doing so will result in altered temperature readings.

For specific instructions regarding the installation of the EGT probe see page 18

Boost Tubing Kit – Installation Instructions

Tools Recommended: 17mm open end wrench, sharp knife or scissors

1. Route tubing through firewall and position ends in their respective locations. Tubing route & length are your choice.
2. To tap into the vacuum system, locate engine’s diverter valve. The soft rubber vacuum line which runs from the intake manifold to the diverter valve may be tapped for an accurate reading. Using a sharp knife or scissors, cut the line in half. Use the included T-fitting to join the vacuum line back together.
3. Use the third barb to connect the boost tubing to the vacuum system. Push the tubing all the way down over the barb. No wire ties or hose clamps are needed on the boost gauge tubing. Use a wire tie to secure the rubber OEM tubing to the T-fitting. To remove the boost gauge tubing from the T-fitting, use a sharp knife to cut back the tubing which covers the barb.
4. Thread the included push-in fitting onto the back of the gauge and tighten using a 17mm open end wrench. Do not over tighten, as plastic threads will strip.
5. With gauge in hand, press the boost tubing into the push-in fitting. To prepare tubing, cut the tube squarely (if not already) and mark the tubing 11/16” (17mm) from the end of the tube. Insert tube straight into fitting until it bottoms out on the interior shoulder and insertion mark is no longer visible.
6. To remove tubing, push collet toward body and pull on tubing to release.

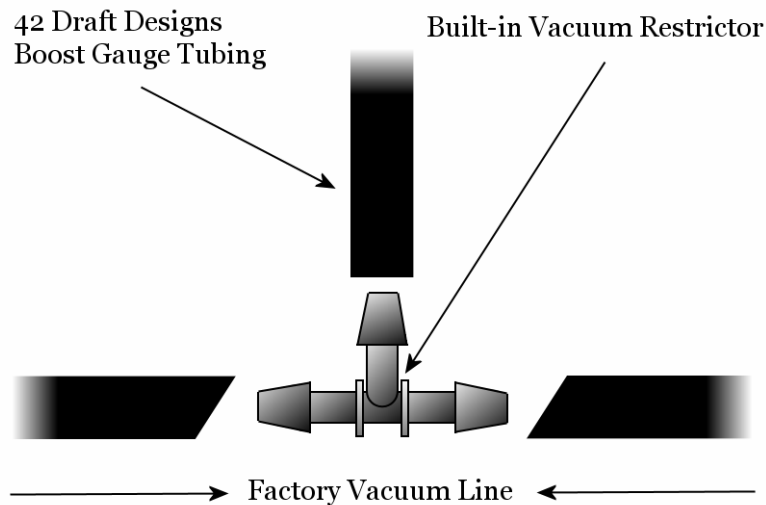
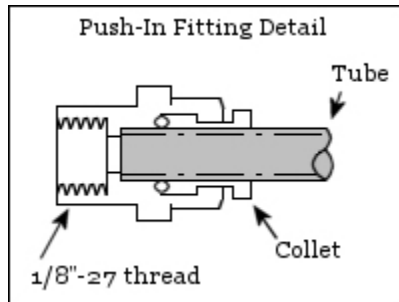
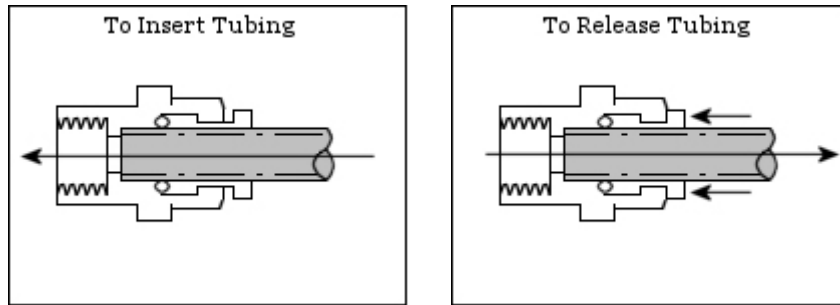
Restrictor T Fitting

The T-fitting included with our boost tubing kit has a built in restrictor to prevent vibrations in the boosted air stream from reaching the gauge. Vibrations produced by the turbocharger will vibrate the internals of the gauge and produce a ‘buzz’ sound. In order for the T-fitting to work properly, the center barb of the fitting must connect to the boost gauge tubing. To test the fitting, notice the center barb is not a through-hole.

Located inside the bottom of the barb is a tiny hole.

Please view diagram to the right!

EVO Oil Sender Placement



Tubing must be installed as shown!

The EVO oil filter flange allows for the simple installation of both an oil temperature sender and an oil pressure sender. The flange houses 2 blank plugs, both with 3/8" BSPT threads.

To locate these plugs, remove the oil filter. You will see two hex keyed plugs. One of the plugs directly faces the control arm – subframe bolt. The other faces the axle. Beware – they are tight! Your best bet is an 8mm hex key socket on a 3/8" drive ratchet. Step up to a 1/2" ratchet or breaker bar if they won't budge with the 3/8".

To install an oil pressure sender you will need our EVO 1/8" NPT Oil Pressure Adaptor, part # 42-902. We recommend placing this adaptor in the plug which faces the control arm – subframe bolt. This adaptor includes a 45° fitting to clear the subframe. VDO's 150psi 1/8" NPT sender, part # VC-360-004 should be used.

To install an oil temperature sender you will need our EVO 1/8" NPT Oil Temp Adaptor, part # 42-912. We recommend placing this adaptor in the plug which faces the axle. VDO's 300° 1/8" NPT sender, part # VC-323-057 should be used.

Oil Temperature can also be measured at the oil pan. VDO's M14x1.5 sender, part # VC-323-055 can be used to replace the oil drain plug. Temperatures in the oil pan will read 10-15° lower than oil at the oil filter flange.

Tips

When installing oil sending units it is important to maintain a ground between the sending unit and the engine block. Ground is normally maintained in the threads of the sending unit. Use only 1-2 wraps of Teflon tape on sender threads to assure no leaks or loss of ground.

VDO Water Temp Sending Units

Unfortunately, Mitsubishi has left no plug and play location for the addition of a second water temperature sender. We have solved this problem by creating an adaptor which takes the place of the OEM upper thermostat housing.

To measure water temperature, VDO's 250° 1/8" NPT sender, part # VC-323-095 should be used. Our EVO Water Temp Sender Adaptor, part # 42-919 should be used to house the sender.

Installation of the sender and adaptor is fairly easy. First, allow the vehicle to cool completely. Never work on a warm motor! The coolant must be drained below the level of the thermostat in order to install our adaptor. To drain the coolant, first remove any underbody panels which shield the bottom of the radiator. Get your catch pan clean and setup to catch coolant. Remove the lower radiator hose and let the engine's coolant drain out. If you remove the coolant bottle cap coolant will drain faster.

Next, remove the three 10mm nuts which hold the OEM thermostat housing in place. Loosen the hose clamp on the housing and remove the housing. Inspect the seal on the thermostat. Vehicles under 75-100k miles should be able to re-use the thermostat seal. This seal is only available with the purchase of a new thermostat.

Slide the new thermostat housing in the hose and install on the lower thermostat housing. Tighten down the three 10mm nuts and tighten the hose clamp. Install the sender using 2 wraps of Teflon tape. Refill the engine with clean coolant. Check for leaks.

VDO EGT Probe Mounting

The VDO Pyrometer kit includes the gauge, thermocoupler wire, temperature probe and a steel bung. The EGT probe is threaded ¼" – 18 NPT. The steel bung is also threaded ¼" NPT.

When mounting an EGT probe, you have a few options which vary based on ease of install and accuracy of readings. For optimum accuracy, the probe should be located 1-2" from the head. If your motor uses a cast steel manifold, you may remove the manifold and drill / tap a ¼" NPT threaded hole for installation of the probe directly into the manifold. In turbocharged applications the cast manifold **must** be removed to drill and tap. If your motor uses a tubular header, you will need to drill a hole large enough to allow the probe to enter the manifold. Then, you'll need to weld on the included steel bung.

It is recommended that any welding be done off the vehicle!

When welding on the steel bung, be sure to test fit the probe first! The probe and bung use a tapered thread. If the bung is welded on upside down, you will not be able to thread in the sender!

Another option offers an easier installation, but less accurate readings. In this case, the probe may be located post-turbo in the exhaust downpipe. Installation will require the removal of the downpipe. You will need to drill a hole large enough for the sender to enter the piping. Then, you'll need to weld on the steel bung. Typically the probe should be mounted within 1-2" of the turbocharger discharge. However, it may be installed anywhere in the downpipe. With the probe mounted 1-2" away from the turbo discharge readings will be 200-300° lower than an installation pre-turbo.

In most cases, professional help is recommended for EGT probe installations.

Boost Gauge Troubleshooting

Leaks

If you can hear a leak inside the car it's most likely the push-in fitting. Don't panic! Your push-in fitting is **not** defective. These fittings were designed for industrial applications and can handle absolute vacuum and 200psi. If your push-in fitting is leaking, you simply need to insert the tubing all the way. Reference our *Boost Gauge Tubing Kit Installation Instructions* and push the tubing in all the way! It should take some force.

If you feel like you have a leak under the hood, start checking over your OEM vacuum lines. Our fittings fit too tight to leak, so any additional leaks would be from rotten OEM lines. Mitsubishi vacuum lines are of great quality; however rubber lines can dry rot. Replace any OEM rubber line that feels dry rotted.

Boost / Vacuum Readings

If you feel like your gauge isn't reading correctly, first drive the car. You must put load on the engine for a boost gauge to show any real reading. Simply revving the engine will show vacuum readings only. Drive the car in 3rd or 4th gear and engage the throttle completely at a low rpm. This will put sufficient load on the motor to make full boost.

The EVO engine will be in vacuum when not boosting. When the engine is warmed up, the engine should pull 16" – 20" of vacuum at idle. When driving around town, the engine should be in vacuum anytime the throttle body is closed or only open slightly. The car will only make boost when there is sufficient load on the motor.

Buzzing

The T-fitting included with our boost tubing kit has a built in restrictor to prevent vibrations in the boosted air stream from reaching the gauge. Vibrations produced by the turbocharger will vibrate the internals of the gauge and produce a 'buzz' sound. In order for the T-fitting to work properly, the center barb of the fitting must connect to the boost gauge tubing. To test the fitting, notice the center barb is not a through-hole. Located inside the bottom of the barb is a tiny hole. Blowing through this barb will produce only a small amount of air.

If your gauge is still making a buzzing noise, an additional inline restrictor can be added. You can also experiment with adding an additional buffer at the gauge. Remove the push-in fitting and place a small amount of cotton inside the brass threaded barb on the back of the gauge. Use cotton from a cotton ball or Q-tip. Beware – cotton can be very restrictive. Start small and be sure that the additional restriction has not affected boost and vacuum readings.



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