42 Draft Designs

Gauge Solution Installation Instruction Manual

*** VDO Gauges / VW Vehicles ***

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.

Jetta IV, Golf IV Triple Gauge Panel Installation Instructions

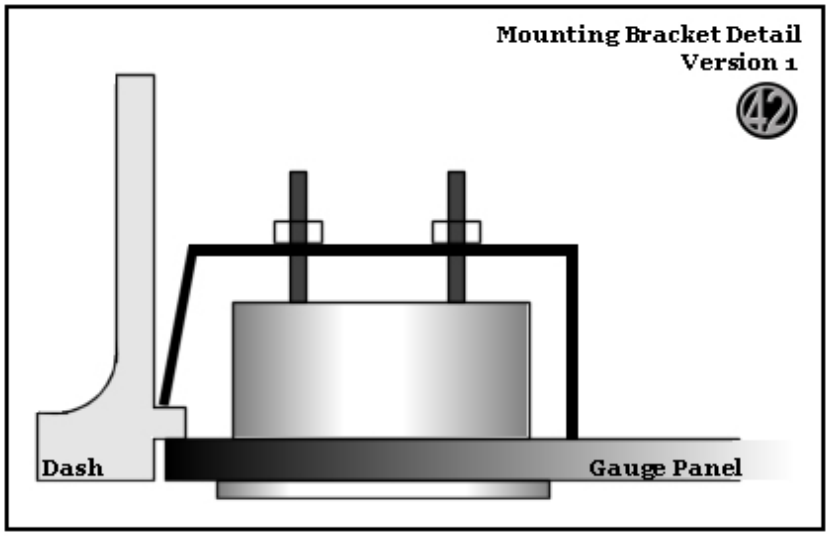
Tools Recommended: Radio Removal Keys

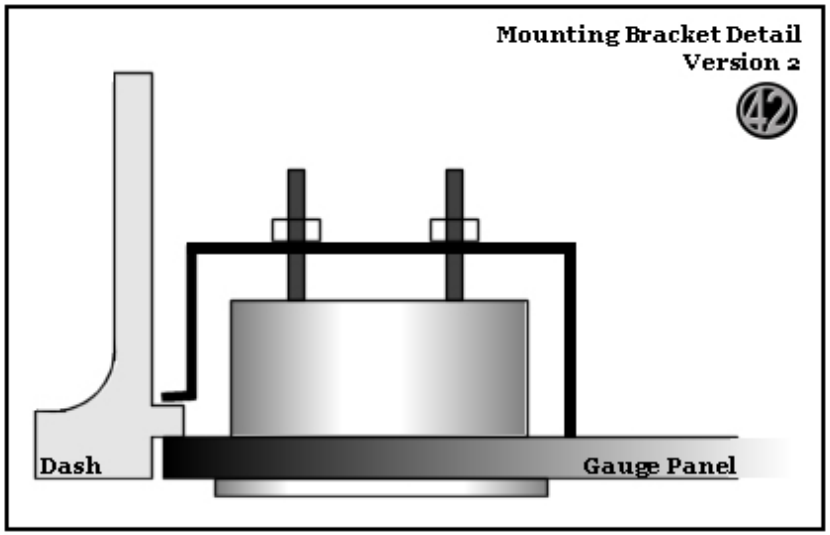
1. Prior to installing gauge panel, have all wires and tubing run to gauges and tested. It is recommended that all wires be left long to free workspace behind the panel.
2. Remove radio using radio removal keys. Snap keys in. Pull up and out. With radio hanging out, cover climate controls with a soft cloth to avoid scratches. Push in tabs on side of radio to remove keys.
3. Remove storage bin by pulling straight out.
4. Install center gauge into panel using standard U brackets included with most aftermarket gauges. If your 2 1/16 gauges did not come with mounting brackets, fabricate some, or order the standard brackets. Tighten center gauge tight by hand. Over tightening gauge will cause panel to bend.
5. The outer mounting brackets must be modified to install the triple gauge panel. There are two ways to modify the brackets to secure the panel.

As illustrated to the right, you can simply use the outer leg of the mounting bracket to secure the gauge panel in place. To do this, you will need to cut the outer leg 1/8" shorter than the inner leg, and bend outward to extend beyond the side of the gauge panel. When installing, you will need at least ¼" of slack between the mounting bracket legs and the appropriate ribs along the inside of the center console. If need be, cut the bottom of the legs proportionally to allow enough slack.

Similar to the above method, version 2 uses a modified outer bracket. In this case, instead of cutting 1/8" off the outer leg, a 1/8" long 90° bend is made to secure the gauge panel to the center console. When installing, you will also need ¼" of slack between the mounting bracket and the rib of the center console. Modify accordingly.

6. Install modified brackets and leave loose, allowing at least ¼" slack between panel and brackets. Install all wires and sit panel in place. Once again, test all connections and gauges.
7. Reaching up from the radio slot, position either modified bracket onto the inner rib of the center console, and tighten the corresponding nut. Repeat for other side. Center panel, and align so the cup holder opens freely. Tighten nuts on outer brackets tight, by hand. Replace radio and push gauge panel down against radio face. When positioning gauge panel into place, it helps to work one side at a time aligning the panel, and working the brackets into place. Good luck and have fun!





Jetta IV, Golf IV Aluminum Double & Triple Gauge Panel Installation Instructions

Tools Recommended: Radio Removal Keys

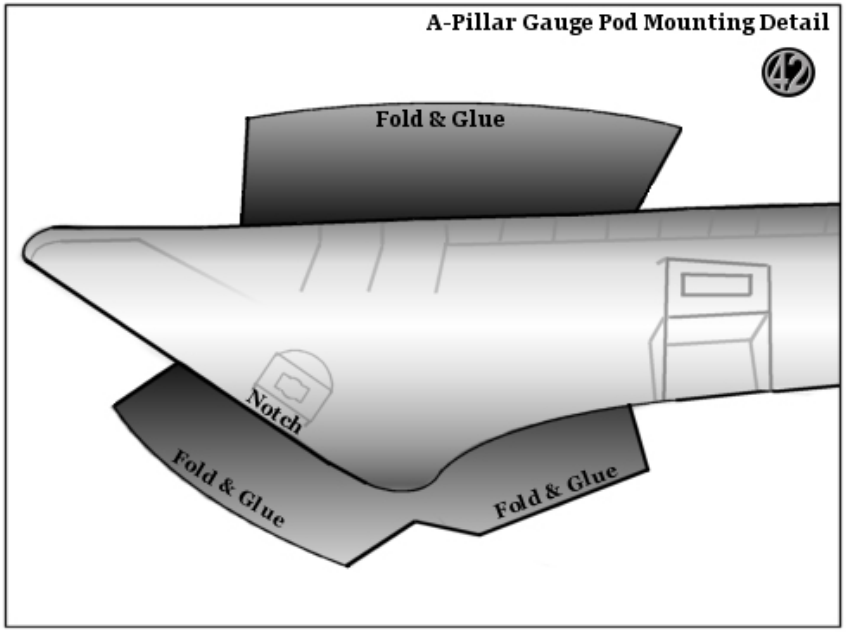
8. Prior to installing gauge panel, have all wiring and tubing run to gauges and tested. It is recommended that all wires be left long to free workspace behind the panel.
9. Remove radio using radio removal keys. Snap keys in. Pull up and out. With radio hanging out, cover climate controls with a soft cloth to avoid scratches. Push in tabs on side of radio to remove keys.
10. Remove storage bin by pulling straight out.
11. Notice the ribs on the left and right of the open DIN slot. The gauge panel will sit flat against these ribs. The backplate will sit flat against the back of the ribs. The backplate has been machined for clearance. The larger notches should be oriented downwards. The smaller notches and thinner top contour should be oriented upwards.
12. Install backplate in the correct orientation. Hold the backplate in place and install the gauge panel.
13. Insert your center gauge through both panels and secure by hand tightening the gauge's mounting bracket against the backplate. It may be necessary to trim the mounting brackets if they are too long. All gauges differ.
14. With the center gauge in place, make any adjustments to the fitment of the gauge panel. If it seems the panel is sitting too low, you may have the backplate installed upside down. The top of the backplate has been machined so that the gauge panel will sit at the correct height.
15. Install the remaining gauges by inserting them through both panels and hand tightening the mounting brackets. Go back over all the gauges and tighten them up – by hand! Tools should not be necessary for tightening the gauges in place.
16. Connect any wiring or tubing to the gauges at this time. Be sure to test all lighting and gauge functions. Route any extra wiring or tubing up high and push back into the dash. No wiring should hang down and interfere with the radio. Replace radio by sliding back into place.

A-Pillar Gauge Pod Installation Instructions
Jetta IV, Golf IV

Some 2001 and later Volkswagen vehicles use A-pillar mount airbags. A-pillar pods should **NOT** be used on these vehicles.

1. Remove A-pillar trim by locating upper seam and prying outward. Use clean hands and avoid using any type of tool to pry. Once a small opening is created at the pillar top, use some force to release the 3 plastic mounting clips. With A-pillar cover pulled out, lift upwards remove completely.
2. On a clean surface, test fit gauge pod on pillar trim. Notice the pod will only fit in the lowest position. Line edges up and wrap the fabric tabs over pillar trim. Use sharp scissors to precisely notch the tabs where any protrusions of the pillar trim exist.
3. Fit gauge and secure using the gauge's supplied mounting hardware. Decide on a wiring route. Wire and tubing can be run under the molded wire trail on the bottom of the pod. Install any tubing or wiring at this point. The gauge and lighting (LEDs have polarity!) should be tested prior to permanent installation.
4. With gauge secured, mount pod on the A-pillar trim. The three fabric tabs should be wrapped **tightly** and secured to the back of the A-pillar trim. For a permanent installation, use contact cement or glue of choice. For a temporary installation, use foil tape or duct tape to secure the fabric tabs to the back of the trim. During mounting, hold pod tightly against trim to assure a flawless seam between pod and trim. Consider using tape to hold tabs in place if gluing tabs one by one. Remember, tabs should be wrapped **tight** and glued to the **back** of the stock trim. This installation should make no permanent modification to the visible area of the stock A-pillar trim.
5. With pod mounted and glue dry, route wires and tubing down the side of the dashboard. Install wires and tubing based on manufacturer's instructions.
6. Reinstall A-pillar trim by inserting bottom section between the frame, dashboard, and weather stripping. Fold in and position based on the location of the upper seam. When in position, push trim back into place. Use force to snap mounting clips in securely. Good luck and have fun!

Please view diagram on the following page!



Some 2001 and later Volkswagen vehicles use A-pillar mount airbags. A-pillar pods should **NOT** be used on these vehicles.

Adhesives

Contact cement offers the best adhesion, but is difficult to remove. To change the gauge or lighting LED the pod will need to be removed. Keep this in mind when choosing an adhesion method. Many customers have found duct tape and foil tape to hold well while offering a removable adhesion.

A-Pillar Gauge Pod Installation Instructions
Passat B5

Some 2001 and later Volkswagen vehicles use A-pillar mount airbags. A-pillar pods should **NOT** be used on these vehicles.

17. Remove a-pillar trim by locating upper seam and prying outward. Use clean hands and avoid using any type of tool to pry. Once a small opening is created at the pillar top, use some force to release the 4 plastic mounting clips. With a-pillar cover pulled out, lift upwards and remove completely.
18. On a clean surface, lay out gauge pod and a-pillar trim. There will be a faint imprint on the a-pillar trim outlining the top of the dashboard. The bottom (plastic) edge of the gauge pod should be positioned to follow this line and rest on the dashboard. The dashed line in the drawing below represents the top of the dashboard.
19. Line edges up and wrap the fabric tabs over the a-pillar trim. Use sharp scissors to precisely notch the tabs where any protrusions of the pillar trim exist. Use masking tape to secure fabric tabs during test fitment. With gauge pod positioned, test fit the assembled gauge pod and a-pillar trim to check fitment. Adjust as required.
20. Once you have the pod positioned correctly, begin to mark the a-pillar trim for drilling.***** See diagrams below for approximate positioning of the hole to be drilled. The hole should be at least 3/8" in diameter to accommodate tubing and wiring. The position of the hole should be such that the tubing can easily route from the gauge without any sharp bends. Before drilling the hole, be sure you are happy with the positioning of the gauge pod and have test fitted the assembled unit in the car with gauge and fittings installed. The hole should not be visible with gauge pod installed. **Measure twice, drill once.**
21. Fit gauge and secure using the gauge's supplied mounting hardware. Some gauges' u-brackets may need to be modified to fit within the tight constraints of this installation. Simply bend the u-bracket to clear the a-pillar trim. Install any fittings, tubing or wiring at this point. **The gauge and lighting (LEDs have polarity!) should be tested prior to permanent installation.** This is also a good time to be sure your gauge is clocked correctly.
22. With gauge secured, mount pod on the a-pillar trim. The three fabric tabs should be wrapped **tightly** and secured to the back of the a-pillar trim. For a permanent installation, use contact cement or glue of choice. For a temporary installation, use foil tape or duct tape to secure the fabric tabs to the back of the trim. During mounting, hold pod tightly against trim to assure a flawless seam between pod and trim. Consider using tape to hold tabs in place if gluing tabs one by one. Remember, tabs should be wrapped **tight** and glued to the **back** of the stock trim. No adhesive or screws should be used to fasten the gauge pod to the visible area of the stock A-pillar trim.

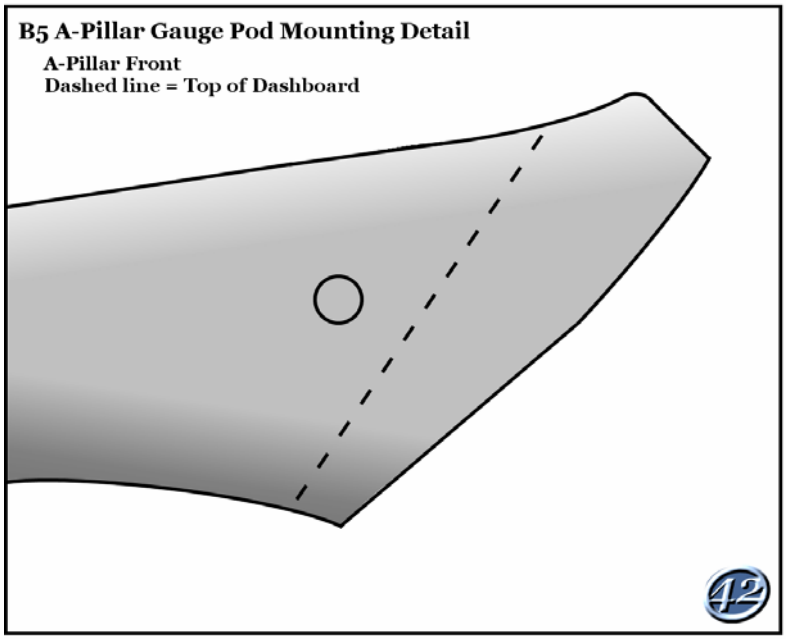
Adhesives
Contact cement offers the best adhesion, but is difficult to remove. To change the gauge or lighting LED the pod will need to be removed. Keep this in mind when choosing an adhesion method. Many customers have found duct tape and foil tape to hold well while offering a removable adhesion.

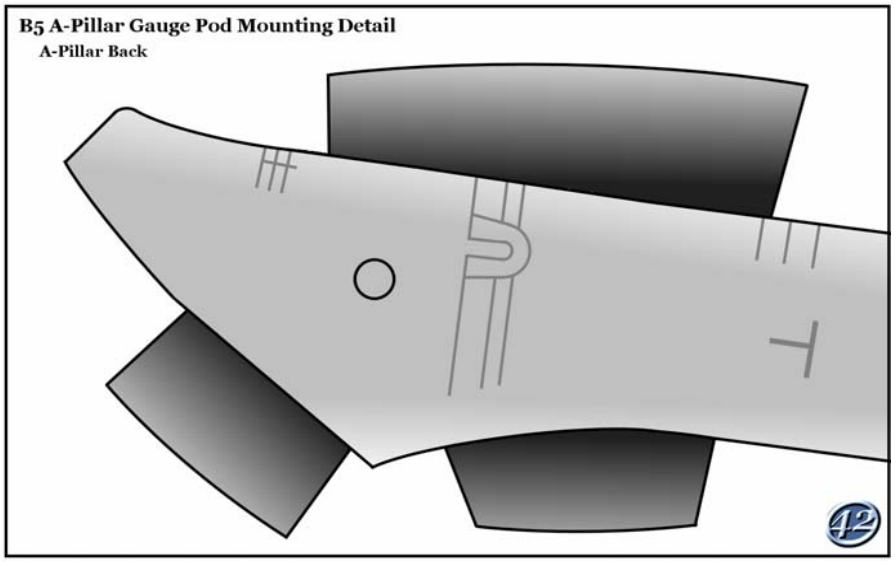
23. With pod mounted and glue dry, route wires and tubing down the side of the dashboard. Install wires and tubing based on manufacturer's instructions.
24. Reinstall A-pillar trim by inserting bottom section between the frame, dashboard, and weather stripping. Fold in and position based on the location of the upper seam. When in position, push trim back into place. Use force to snap mounting clips in securely. Good luck and have fun!

***Drilling**
Fitment between the dashboard and a-pillar trim in the B5 is extremely tight. Boost gauge tubing cannot be routed between the pod and pillar trim. It is physically impossible to squeeze anything extra in this area. In order to run tubing to a boost gauge, a hole must be drilled in the stock pillar trim.

If installing a gauge other than boost, it may be possible to run wires without drilling a hole in the a-pillar trim. If running only wires to the gauge, installation can be attempted by routing the wires between the pod and the pillar trim. Any extra wires in this area will cause a tighter fitment in the area between the a-pillar trim and dashboard.

Please view diagram to the right!





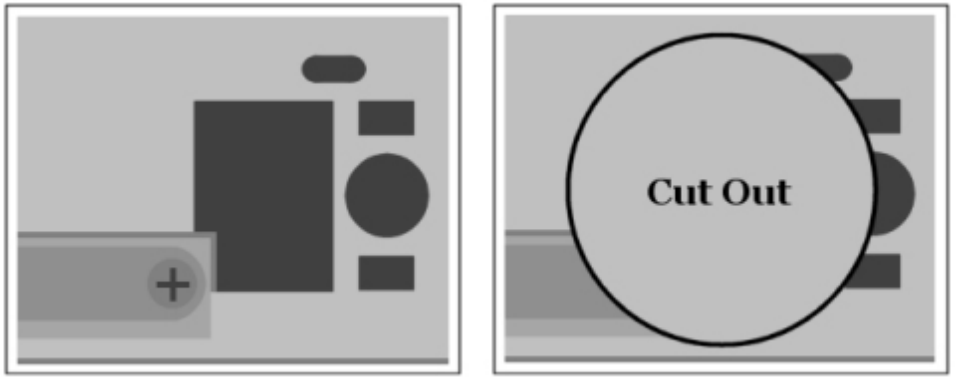
Jetta III, Golf III Single Gauge Panel Installation Instructions

Tools Recommended: Flat head screwdriver, Phillips head screwdriver, Rotary cutting tool (Dremel®)

1. Remove heated seat blank panels by prying out from the bottom. They will snap out when released.
2. Test fit gauge panel by inserting the long tab into the corresponding hole below the air vent. Push tab fully into the air vent hole and pop the bottom of panel into place. Using a permanent marker, trace the gauge hole. Remove panel.
3. Remove the gauge cluster screw using a phillips head screwdriver. Also remove the metal clip behind the screw by prying out with a flathead screwdriver. Using a Dremel or other cutting device, cut the traced circle approximately 1/8" larger in diameter.

   If you are using a mounting bracket on your gauge you will need to cut the majority of the console area out. With the gauge installed in the panel you will need room to clear the mounting bracket and snap in the assembled unit. This is only recommended if your gauge fits loose in the panel.

4. Route wires from the gauge to below the dash. Assemble the gauge and panel test all electrical connections. Refer to VDO manual for individual gauge wiring instructions.
5. Install the panel by again fitting the upper tab into the corresponding hole and popping into place. Align gauge and press into panel.



MK3 Single Gauge Panel – Cutting Detail

VDO Gauge Wiring – Volkswagen 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.

In the mk4 chassis the dimmer switch wiring harness consists of 3 wires. The brown wire is ground, gray wire is incoming power and the white/blue wire is outgoing power. Tap the white/blue 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 white/gray wire of the dimmer switch.

In the mk3 chassis the dimmer switch is built into the headlight switch. The gray/blue wire located in position 1 is outgoing power. Tap this wire and connect it to the red wire of your 42 lighting harness.

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 mk4 chassis a switched 12v power source can be found on the relay block under the dash. To access this block, remove the left dashboard trim panel and the rubbery panel above the pedal cluster. Above the clutch pedal you'll find a relay block consisting of 5-6 relays. Each relay has a studded terminal with a 10mm nut. The relay labeled 75X should be hot with the ignition on or engine running. You may connect your red power wires to this relay using the included ring terminals.

In the mk3 chassis you may find switched 12v power at the fuse box. Use a test light or multimeter to locate a fuse which is powered with the engine running and not powered with the engine off. Tap the powered wire as it exits the fuse box.

Ground

Ground is a simple connection in any VW. Because they use a common chassis ground, all you have to do is locate a screw that connects to the chassis. In the mk3 and mk4 chassis, a convenient location is the dashboard support. With your lower dash panels removed, locate a screw which connects the plastic dash panels to the metal dashboard support. Remove the screw and sand any paint of corrosion off the metal to ensure a good connection. Then, ground your wire using the included ring terminal.

Firewall

In the mk4 chassis there are 2 options for running wires through the firewall. On throttle by cable cars you'll need to run your wires through the firewall with the main wiring harness. You can poke through using a long metal rod or coat hanger. On throttle by wire cars there is an empty grommet above the throttle pedal. This grommet is located where a throttle cable would typically be located. Running wires through this grommet is ideal.

Also, you may choose to run wires through where the hood release cable enters the rain tray. If you do run wires through this grommet, be sure to poke a hole in the grommet and feed the wires through the grommet. Rainwater will enter the cabin if the grommet is not installed correctly.

In the mk3 chassis there is an empty grommet above the clutch pedal. Running wires through this grommet is ideal.

VDO Perfect Match LED Installation Instructions

***** Perfect Match LEDs should **NEVER** be powered without a 42 Draft Designs Power Regulator!
******Power Regulator 12 volt input **MUST** be vehicle dimmer switch!
*******Any other connection to power voids warranty immediately!

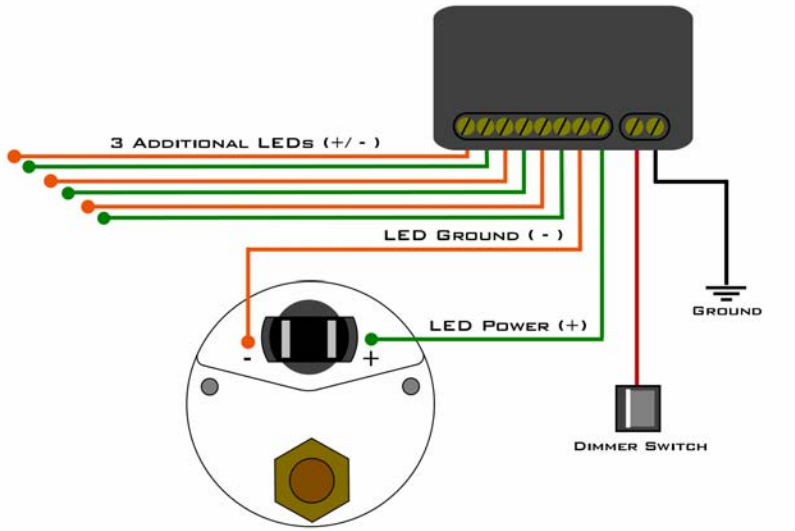
Tools Recommended: Wire Cutter, Wire Stripper, Terminal Crimper, Small Flat-Head Screwdriver

1. Remove any interior panels necessary to access the dimmer switch, common ground, and gauge mount. Locate the output wire of your dimmer switch and a common ground.
2. Using the included 22 gauge wire, tap the output wire of your dimmer switch and connect to the appropriate terminal of the power regulator.
3. Using the included 22 gauge wire and 'red' ring terminal, connect the power regulator to a common ground.
4. Remove VDO light bulb socket and remove light bulb. Install PM LED by pushing directly into lamp socket.
5. Using 2 pieces of included 22 gauge wire and 2 'red' spade terminals connect one LED & lamp socket to the power regulator. Positive and negative power terminals are clearly labeled.

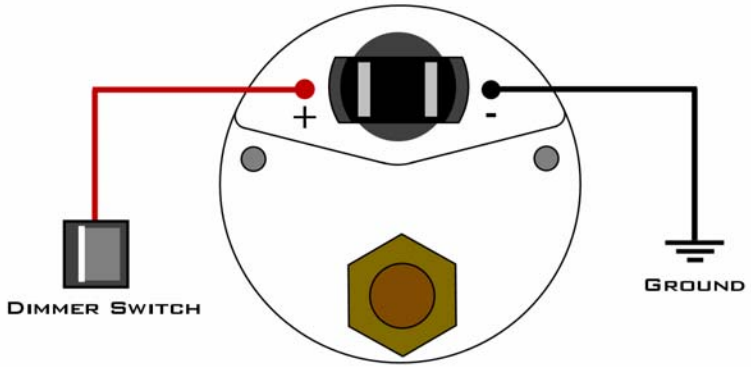
6. Apply power to the regulator by turning on the vehicle's lights. LED should light immediately. If not lit, remove the bulb from the lamp socket and rotate 180˚.
7. Install up to 3 more LEDs as needed.
8. Mount power regulator in a solid location to ensure the best electrical connection. It is recommended that the power regulator be isolated from the gauge panel / pod.

Installation Tips & Precautions! :

- For best results, we recommend the connection to the dimmer switch output wire be soldered. Simply wrapping wires together is far from ideal.
- Never connect power regulator to vehicle common 12 volt power. The dimmer switch provides the regulator with a clean 12 volt power source. Vehicle common 12 volt is typically 14+ volts and will destroy this product!
- Never connect more than one LED to a set of +/- terminals. This regulator will power 4 LEDs – no more! Each set of terminals provides one LED with regulated power.
- Do not over tighten the power regulator screw terminals. Screw terminals are not head studs, they are just electrical connections! Last but not least, please **follow these instructions and pay attention to the warnings!** We don't provide these instructions for our health – we write them to ensure you, the customer is able to install our product flawlessly the first time and avoid common mistakes. Good Luck and Have Fun!



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 shielded 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.

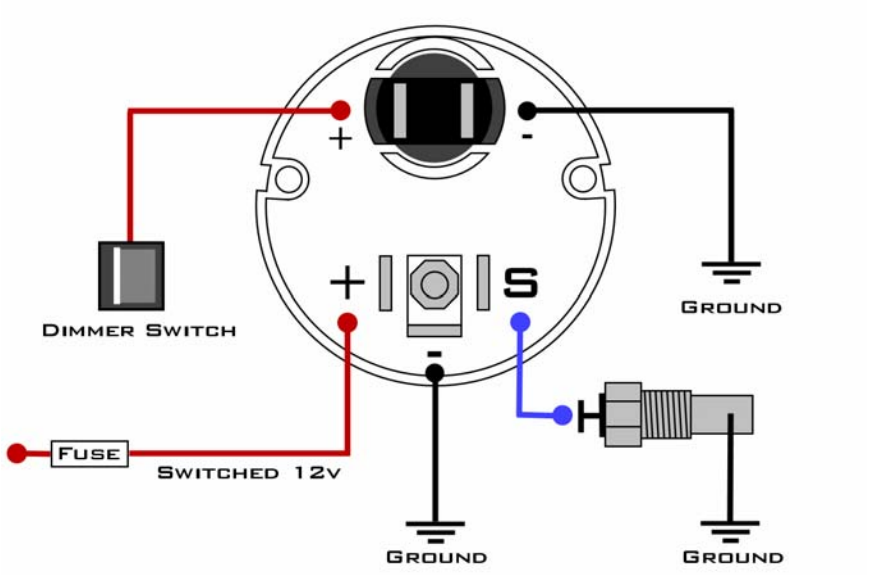
Locate the output wire on your dimmer switch and strip the insulation from a ¼" section. Connect the red wire from your 42 wiring harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires.

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

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 23-25

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 shielded 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 lighting harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires.

Locate a suitable common ground and connect both the lighting circuit ground and the gauge ground using the included ¼" ring terminals. 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 ring terminal 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 the pre-crimped terminal.

Locate an empty grommet in your firewall and route the sender wire into the engine bay. Connect the sender wire to the gauge using the pre-crimped 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. If the gauge shows little or erratic readings, be sure the temperature sender is well grounded to the engine block through the threads.

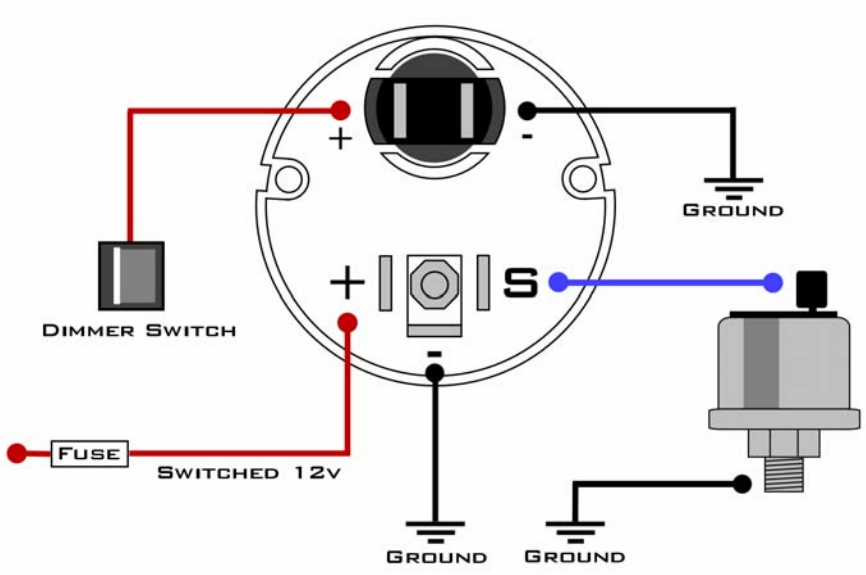
For specific instructions regarding sending units see the following pages:

Oil Sender Placement

1.8t 26-27
2.0 28-29
VR6 30-32
TDI 33-34

Water Temperature Sending Units – 37

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 shielded 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 lighting harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires.

Locate a suitable common ground and connect both the lighting circuit ground and the gauge ground using the included ¼" ring terminals. 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 ring terminal 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 the pre-crimped terminal.

Locate an empty grommet in your firewall and route the sender wire into the engine bay. Connect the sender wire to the gauge using the pre-crimped 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. If the gauge shows little or erratic readings, be sure the pressure sender is well grounded to the engine block through the threads.

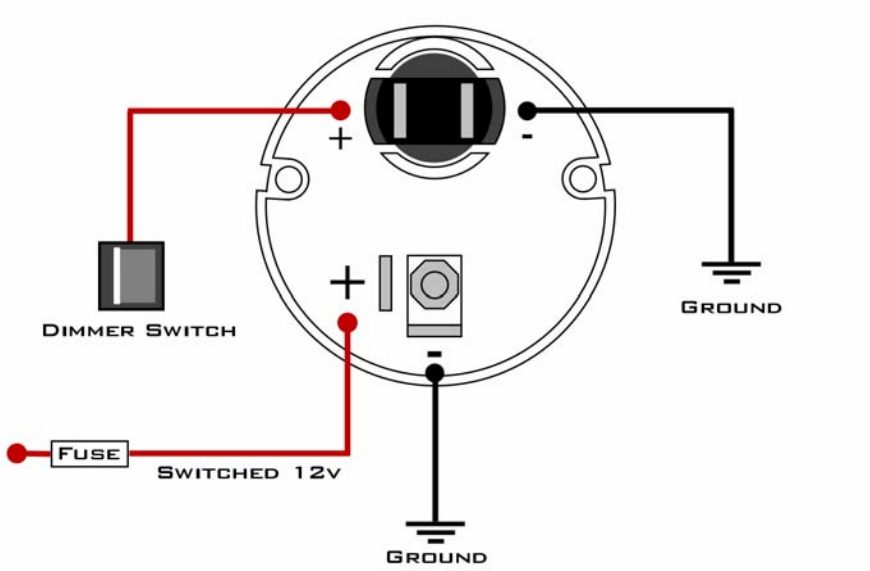
For specific instructions regarding sending units see the following pages:

Oil Sender Placement

1.8t 26-27
2.0 28-29
VR6 30-32
TDI 33-34

Oil Pressure Relocation Kit Instructions – 35-36

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 shielded 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 lighting harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires.

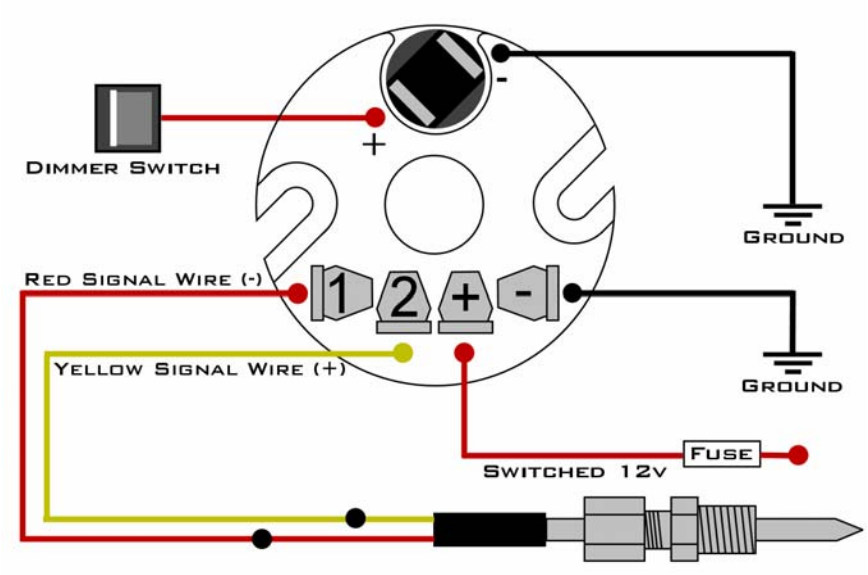
Locate a suitable common ground and connect both the lighting circuit ground and the gauge ground using the included ¼" ring terminals. Be

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 ring terminal 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 the pre-crimped 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.

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 shielded 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 lighting harness to the stripped section using a wire tap or solder. Be sure to shrink wrap or tape any bare wires.

Locate a suitable common ground and connect both the lighting circuit ground and the gauge ground using the included ¼" ring terminals. 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 ring terminal 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 the pre-crimped terminal.

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 pages 37-38

Boost Tubing Kit – Installation Instructions

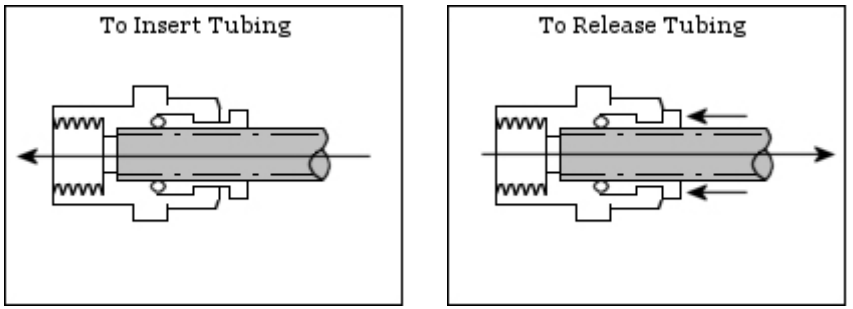
Tools Recommended: 17mm open end wrench, sharp knife or scissors

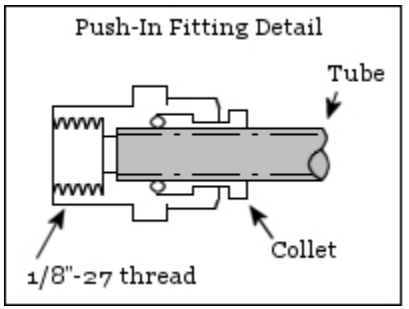
1. Route tubing through firewall and position ends in their respective locations. Tubing route & length are your choice.
2. To tap into the vacuum system, locate engine's fuel pressure regulator. The braided vacuum line which runs from the intake manifold to the fuel pressure regulator may be tapped 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. To remove any 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.

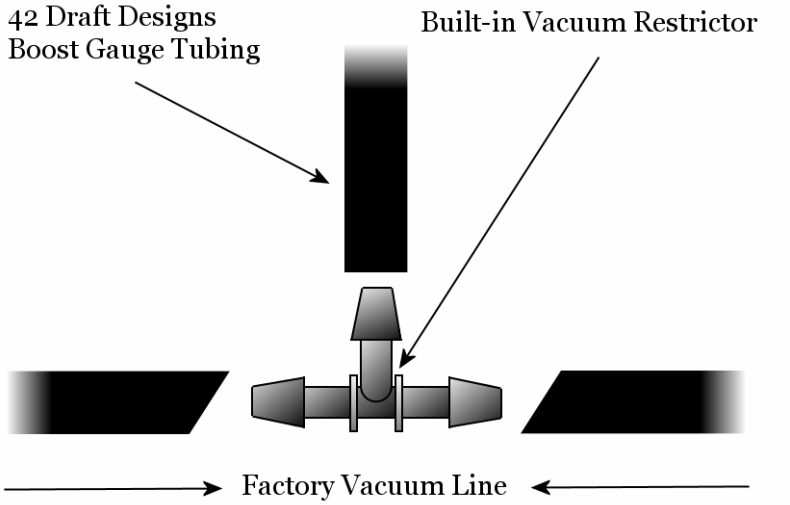
Restrictor T Fitting

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 on the following page!







Tubing must be installed as shown!

TDI Boost Tubing Kit – Installation Instructions

Tools Recommended:

17mm Open End Wrench	Sharp Knife or Scissors
#21 (.159”) Drill Bit	Portable Drill
#10-32 Tap	Plastic Thread Sealant

1. Route tubing through firewall and position ends in their respective locations. Tubing route & length are your choice.
2. To tap into the boost system, locate engine’s plastic intercooler plumbing. The lower or upper intercooler pipes may be tapped. Remove the tube which you wish to tap and find an ideal location to install the barb. The location should be thick and discrete, but easy to locate.
3. With the tube installed, be sure the chosen location does not interfere with any engine components. Mark and remove. Carefully drill a hole in the marked location using a #21 (.159”) drill bit. Using a #10-32 tap, lightly tap the drilled hole. Tapping plastic requires very little force – the tap should thread the hole easily and back out easily. Be careful not to use excessive force and strip the hole.
4. Thread the included barb into the tapped hole. Use some thread sealant to assure no leaks. Super glue or hobby cement will offer a permanent seal on ABS plastic. Simple Teflon® tape will also offer a good seal.
5. With the pipe installed, push the tubing all the way down over the barb. No wire ties or hose clamps are needed. To remove any tubing from the T-fitting, use a sharp knife to cut back the tubing which covers the barb.
6. 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.
7. 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.
8. To remove tubing, push collet toward body and pull on tubing to release.

Inline Restrictor Fitting

The inline 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. This fitting may be installed anywhere in the boost tubing. We recommend installing it underneath the dashboard. Simply cut the tubing and install. No hose clamps are necessary.

VDO Oil Sender Placement – 1.8T

The 1.8T oil filter flange allows for the simple installation of both an oil temperature sender and an oil pressure sender. The flange houses 1 blank plug and a stock oil pressure sending unit - both with M10x1 threads.

Plug #10 is an excellent location to measure oil temperature. VDO's 300°F Oil Temp Sender, part # 323-423 will take the place of the blank plug and accurately measure oil temperature. If measuring oil pressure but not temperature, VDO's 80PSI Oil Pressure Sender, part # 360-001 will also take the place of plug #10.

If measuring oil temperature and pressure, you will need an Oil Pressure Relocation kit, part # 42-004. Our oil pressure relocation kits have been designed to allow our customers to install both the VDO oil pressure sender and the OEM oil pressure sender remotely. The Oil pressure relocation kit will take the place of the stock oil pressure sender, # 16 as shown below. The stock sender will now be located aside the VDO sender (360-001) 12" away from the oil filter flange where sufficient room exist.

Tools Required:
24mm Deep Socket
5mm Hex Wrench
12mm Deep Socket

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 wrap of Teflon tape on sender threads to assure no leaks or loss of ground.

The #10 bolt is installed TIGHT from the factory. Be sure to use a 5mm hex head wrench to remove. The most convenient way to access and remove the #10 bolt is to use a 5mm hex socket and a series of extensions.

You may also find it convenient to remove the bracket holding the engine speed sensor connector. Do use this using a 10mm open end wrench or socket.

For specific Oil Pressure Relocation Kit instructions please see pages 35-36

VDO Oil Sender Placement – 1.8T

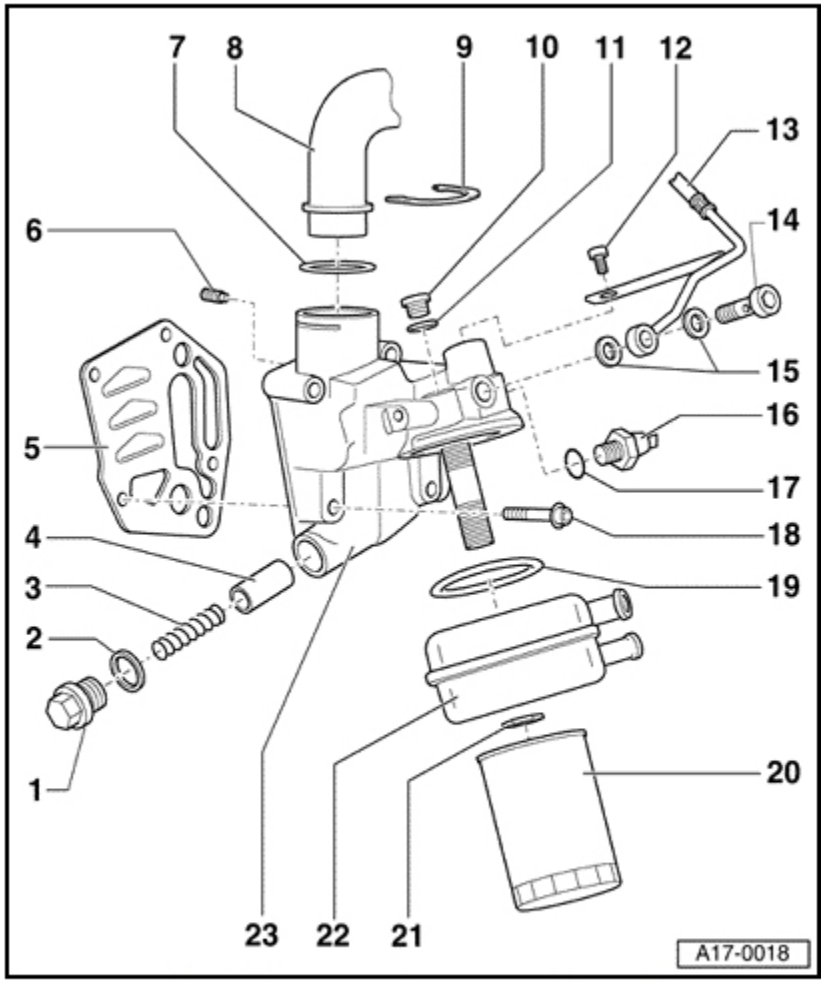


Diagram by Volkswagen of America, from *Volkswagen Jetta, Golf, GTI Service Manual: 1999-2002*, © Bentley Publishers.

VDO Oil Sender Placement - 2.o

The 2.0 oil filter flange allows for the simple installation of both an oil temperature sender and an oil pressure sender. The flange houses 1 blank plug and a stock oil pressure sending unit - both with M10x1 threads.

Plug #10 is an excellent location to measure oil temperature. VDO's 300°F Oil Temp Sender, part # 323-423 will take the place of the blank plug and accurately measure oil temperature. If measuring oil pressure but not temperature, VDO's 80PSI Oil Pressure Sender, part # 360-001 will also take the place of plug #10.

If measuring oil temperature and pressure, you will need an Oil Pressure Relocation kit, part # 42-004. Our oil pressure relocation kits have been designed to allow our customers to install both the VDO oil pressure sender and the OEM oil pressure sender remotely. The Oil pressure relocation kit will take the place of the stock oil pressure sender, #11 as shown below. The stock sender will now be located aside the VDO sender (360-001) 12" away from the oil filter flange where sufficient room exist.

Tools Required:
24mm Deep Socket
5mm Hex Wrench
12mm Deep Socket

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 wrap of Teflon tape on sender threads to assure no leaks or loss of ground.

The #10 bolt is installed TIGHT from the factory. Be sure to use a 5mm hex head wrench to remove. The most convenient way to access and remove the #10 bolt is to use a 5mm hex socket and a series of extensions.

You may also find it convenient to remove the bracket holding the engine speed sensor connector. Do use this using a 10mm open end wrench or socket.

For specific Oil Pressure Relocation Kit instructions please see pages 35-36

VDO Oil Sender Placement - 2.o

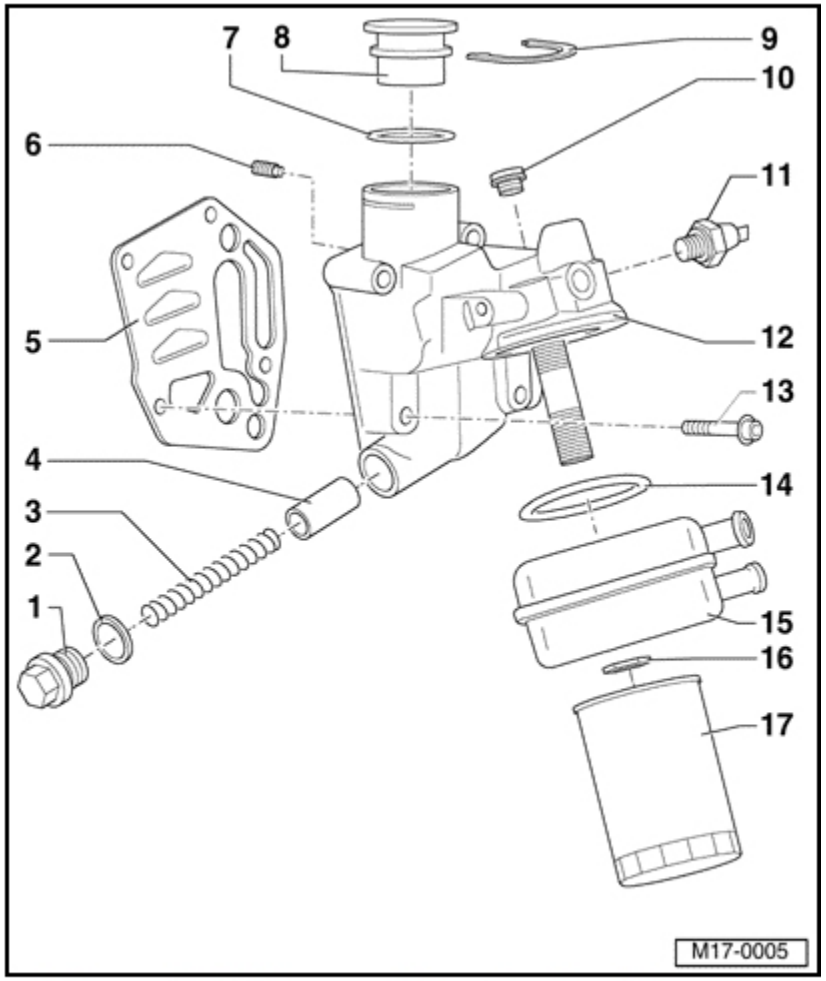


Diagram by Volkswagen of America, from *Volkswagen Jetta, Golf, GTI Service Manual: 1999-2002*,
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VDO Oil Sender Placement – VR6

Three varieties of oil filter flanges exist on the VR6. Mk3 VR6 models have 3 senders - 1 stock temperature sender and 2 stock pressure senders. Early mk4 VR6 models have both a stock oil pressure sender and a blank plug. Many newer VR6 oil filter flanges have only a stock oil pressure sender with M10x1 threads. Sender installation information differs between the three known oil filter flanges.

Mk3 VR6 Oil Filter Flanges

The mk3 VR6 oil filter flange has 3 available holes, all filled with OEM sending units. The front two sending units are pressure and the rear sending unit is temperature. When installing an oil temperature gauge, you will need an Oil Pressure Relocation kit. Use the Relocation kit to install both stock pressure senders in one location. The free hole will then house VDO's 300°F Oil Temp Sender, part # 323-423. When installing a single oil pressure sender, the same guidelines apply. Use a Relocation kit to install the stock sending unit and VDO sending unit in one location.

When installing both VDO oil temperature and pressure senders, the rules change slightly. You will need a Triple Relocation Kit to remotely install the 3 pressure senders in one location - thus creating a spare opening to install the M10x1 oil temperature sender, part # 323-423.

Early mk4 VR6 Oil Filter Flanges

An early VR6 oil filter flange will reveal a blank plug located aside the stock oil pressure sender, #9 as shown below. This blank plug is an excellent location to measure oil temperature. VDO's 300°F Oil Temp Sender, part # 323-423 will take the place of the blank plug and accurately measure oil temperature. If measuring oil pressure but not temperature, VDO's 150PSI Oil Pressure Sender, part # 360-023 will also take the place of the blank plug.

If measuring oil temperature and pressure, you will need an Oil Pressure Relocation kit, part # 42-004. Our oil pressure relocation kits have been designed to allow our customers to install both the VDO oil pressure sender and the OEM oil pressure sender remotely. The Oil pressure relocation kit will take the place of the stock oil pressure sender, #9 as shown below. The stock sender will now be located aside the VDO sender (360-023) 12" away from the oil filter flange where sufficient room exist.

Late mk4 VR6 Oil Filter Flanges

Late VR6 oil filter flanges do not have the empty plug. In order to measure oil temperature you must use an oil drain plug sending unit. VDO's 300°F Oil Temp Sender, part # 323-055 will take the place of the oil drain plug and accurately measure oil temperature.

Our Oil Pressure Relocation kit, part # 42-004, will make it possible to install the stock pressure sender and VDO's 150PSI oil pressure sender (360-023) in one location. The kit will take the place of sender #9 in the diagram below. The stock sender will now be located aside the VDO sender 12" away from the oil filter flange where sufficient room exist.

80psi or 150psi?
The VR6 motor is known to produce oil pressure in excess of 70psi. For this reason, the 150psi oil pressure gauge and sender should always be used on the VR6 motor.

What about the 24v VR6?
The 24v VR6 uses the later oil filter flange. No blank plug is available for measuring oil temperature. Follow the instructions above for installing senders on a late VR6 oil filter flange.

Tools Required:
24mm Deep Socket
5mm Hex Wrench
12mm Deep Socket

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 wrap of Teflon tape on sender threads to assure no leaks or loss of ground.

Access to the VR6 oil filter flange is limited. Most find it easiest to remove the intake manifold. Others choose to remove the entire oil filter flange to install sending units. If removing either component, be sure to follow manufacturer's removal guidelines and replace all gaskets removed.

For specific Oil Pressure Relocation Kit instructions please see pages 35-36

VDO Oil Sender Placement – VR6

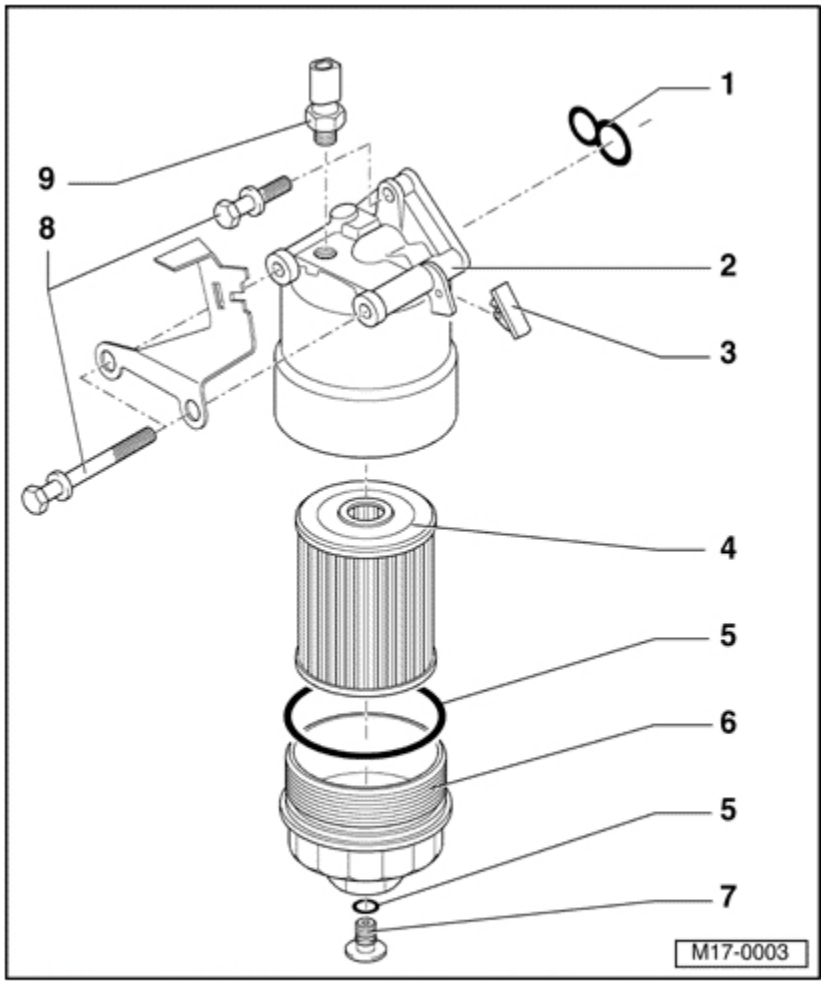

Diagram by Volkswagen of America, from *Volkswagen Jetta, Golf, GTI Service Manual: 1999-2002*,
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VDO Oil Sender Placement – TDI

Two varieties of oil filter flanges exist on the TDI. Early TDI models have both a stock oil pressure sender and a blank plug. Many newer TDI oil filter flanges have only a stock oil pressure sender with M10x1 threads. Sender installation information differs between the two known oil filter flanges.

Early TDI Oil Filter Flanges
Early TDI oil filter flanges are equipped with a blank plug with M10x1 threads. Plug #15 is an excellent location to measure oil pressure. VDO's 80PSI Oil Pressure Sender, part # 360-001 will take the place of plug #10.

If measuring oil temperature, you will need to use an oil drain plug sender. VDO's 300°F Oil Temp Sender, part # 323-055 will take the place of the oil drain plug and accurately measure oil temperature.

Late TDI Oil Filter Flanges
Late TDI Oil Filter Flanges do not have the empty plug. In order to measure oil pressure, you will need to use an Oil Pressure Relocation kit. Our kit, part # 42-004, will make it possible to install the stock pressure sender and VDO's 80PSI oil pressure sender (360-001) in one location. The kit will take the place of sender #1 in the diagram below. The stock sender will now be located aside the VDO sender 12" away from the oil filter flange where sufficient room exist.

If measuring oil temperature, you will need to use an oil drain plug sender. VDO's 300°F Oil Temp Sender, part # 323-055 will take the place of the oil drain plug and accurately measure oil temperature.

Please Note:
Unlike the 1.8t and 2.0 housings, the blank plug in the early TDI oil filter flange does not offer enough depth to house VDO's 300°F Oil Temp Sender, part # 323-423. Those customers who wish to install an oil temperature sender in the blank plug do have an option. VW offers a small OEM temperature sending unit which will fit in the hole without issue and work perfect with a 300°F oil temperature gauge. However, the part is more expensive than the options we offer. VW part # 049-919-563-A sells for $30-$40 at most VW parts suppliers.

Tools Required:
24mm Deep Socket
5mm Hex Wrench
12mm Deep Socket

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 wrap of Teflon tape on sender threads to assure no leaks or loss of ground.

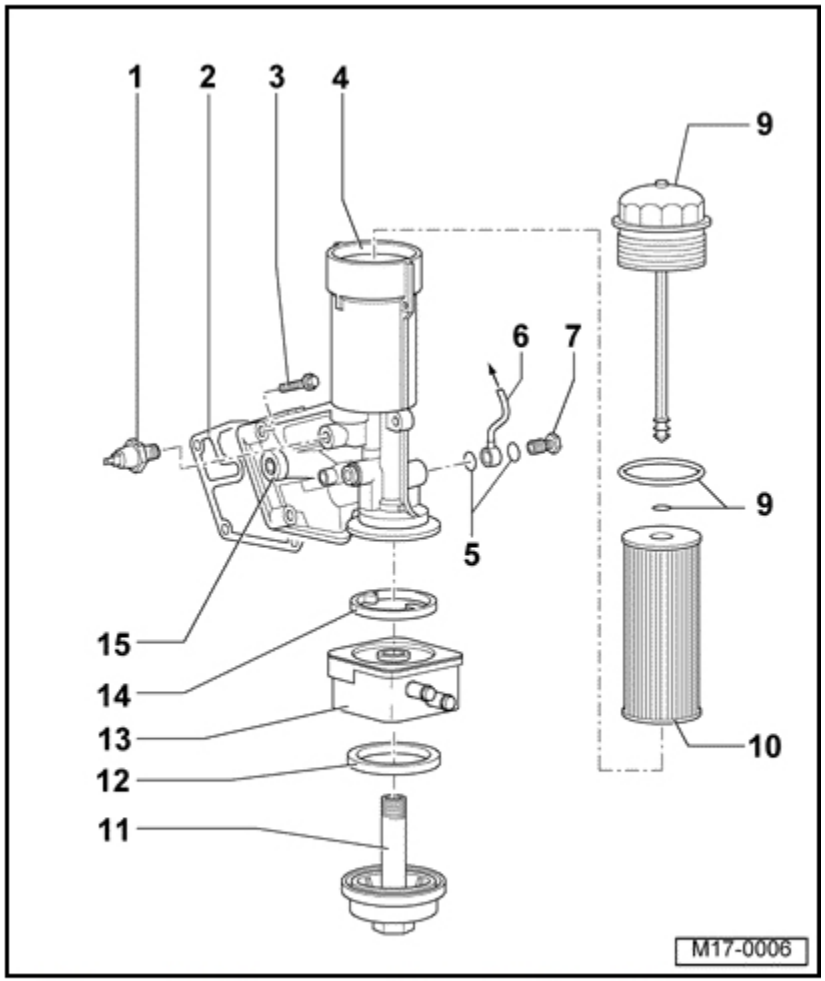

Diagram by Volkswagen of America, from *Volkswagen Jetta, Golf, GTI Service Manual: 1999-2002*,
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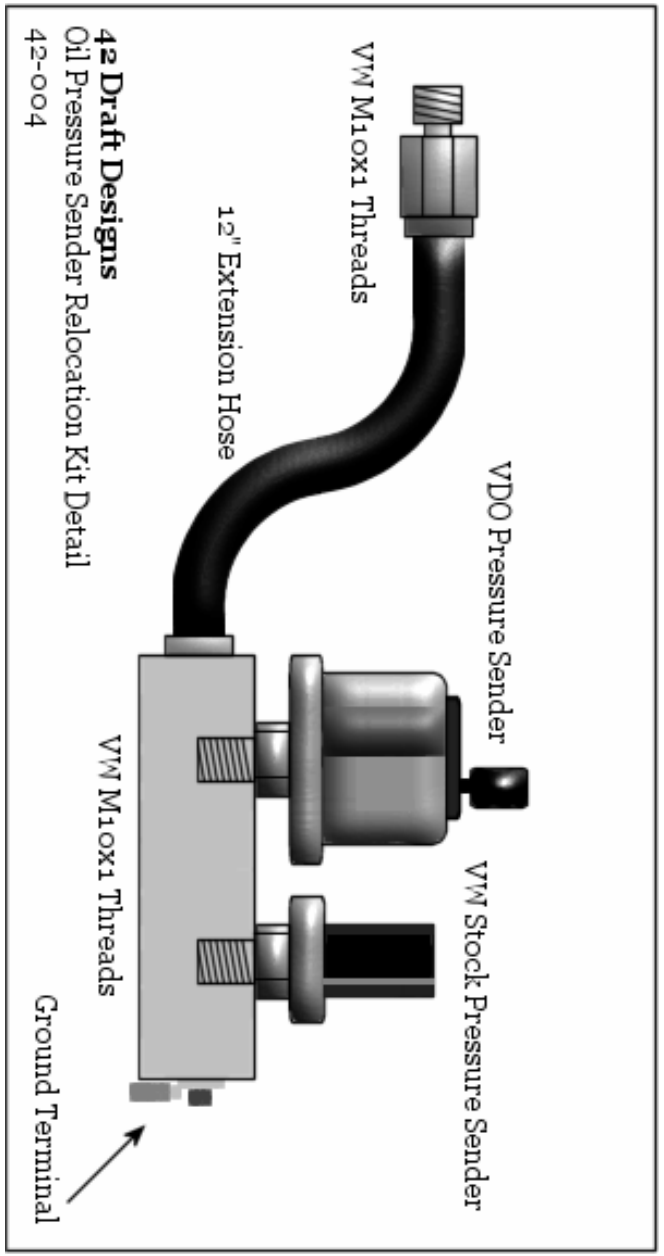
M10x1 Oil Pressure Relocation Kit - Installation Instructions

Tools Recommended: 24mm deep socket, 9/16", 5/8", 11/16" open end wrenches, metric hex wrench set

1. **Never work on a warm motor!** Locate oil filter flange on motor and find the stock oil pressure sender. (pictured below for reference) To access fully, the secondary air injection pump (if equipped) or intake manifold may need to be removed. Remove wiring harness from the stock oil pressure sender and move aside. Using a 24mm deep socket, unscrew the sender.
2. Install brass adaptor using a single wrap of Teflon tape or similar thread sealant to ensure no leaks. Start threads by hand and tighten using a 5/8" socket. Install one end of the 12" extension hose and use a 9/16" open end wrench to tighten. Thread sealant may be used.
3. With oil manifold in hand, install VDO sending unit and stock sending unit. Threads may be sealed with a single wrap of Teflon tape to ensure no leaks and maintain a solid electrical ground. Use an 11/6" wrench to fully tighten VDO sending unit. Tighten the stock oil pressure sender using a 24mm deep socket.
4. Using a wrap of Teflon tape, install the assembled oil manifold on the end of extension hose. Tighten using a 9/16" open end wrench.
5. Secure manifold in a logical location. Location and mounting technique are your choice.
6. Remove the ground terminal and install included ground wire using the appropriate Allen wrench. Connect the unassembled end of the wire to a chassis ground or negative terminal of the battery. Length and location are your choice. Connect VDO sender wiring and reconnect VW wiring harness. If the VW harness will no longer reach, remove more wire from the appropriate loom or extend using leftover ground wire. Be sure to use solder if extending wire and seal any bare wire.
7. Replace any stock components removed and be sure to reconnect any disconnected wiring. Start motor and watch carefully for leaks. The system may take a few days to bleed any air out of the sending units. Odd gauge behavior is a sign of air bubbles in the sending unit. Air is naturally bled from the system over time.

Thread Warning: This product uses 2 different but very similar threads. Pay particular attention to the diagram below. The product may only be installed in the manner described. The holes designated for sending units have M10x1 female threads. Any hole designed to accept the extension hose has female 1/8-27NPT female threads. The brass adaptor uses M10x1 male threads and is designed to take the place of stock VW oil sending units. Always start threads by hand to avoid cross-

threading! Teflon tape may be used as thread sealant to avoid leaks. Never use an excess amount of thread sealant on a sending unit. A ground must be maintained between the sending unit and the manifold. Good luck and have fun!



VDO Water Temp Sending Units

Unfortunately, VW has left no plug and play location for the addition of a second water temperature sender. You have a few options.

Your first option is to install the sender in one of your OEM plastic fittings. To do this, you must remove the fitting and drill / tap a hole to thread the sender. The thread size of your sending unit should be listed on the packaging. Since VDO senders require a grounded connection, you'll need to create a ground strap using a piece of copper wire. You will be grounding the base of the sending unit to the engine block. Also, be sure to use Teflon tape to seal the threads.

Your second option is to purchase a Water Temperature Sender Adaptor. Though we don't yet make this part, a few tuners do. AC AutoTechnic (www.acautotechnic.com) makes one in 3 sizes and uses a 1/8" NPT sending unit. The product allows you to tap into the radiator hose and install your sending unit inline with the radiator hose. Be sure to measure the inner diameter of your hose to determine the correct size to buy.

42 Draft Designs will release a mk3 and mk4 specific water temperature sender adaptor mid-late 2006

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, like the 1.8t and TDI, 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. It may be worth your while to replace any braided OEM line that feels dry rotted.

Boost / Vacuum Readings – 1.8T

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. Don't be alarmed when the gauge spikes and boost drops steadily. This is caused by the undersized OEM turbo running out of breath.

The 1.8T 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.

Early 150hp 1.8T motors should boost 8-10psi stock. Later 180hp and 225hp 1.8T motors should boost 12-14psi stock. If you purchase a performance chip please contact the manufacturer for expected boost

readings. Typical 'chipped' 180hp 1.8t engines spike 22+psi and hold 15-16psi in the upper RPMs.

Boost / Vacuum Readings – TDI

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 only slight boost. 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. Don't be alarmed when the gauge spikes and boost drops slightly. TDI turbos are infamous for spiking high when needed.

TDI motors have no throttle body, therefore they pull very little vacuum. A 0-15 or 0-30 boost gauge should be used. If you are using a 30"-25psi boost gauge on your TDI, you will notice that the motor pulls less than 5" of vacuum. This is normal.

Buzzing – 1.8T

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.

Buzzing – TDI

The inline 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. This fitting may be installed anywhere in the boost tubing. We recommend installing it underneath the dashboard. Simply cut the tubing and install. No hose clamps are necessary.

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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