



Model E3 Exhaust Bypass Valve Controller Installation Instructions

Note: These instructions are available on our web site:
www.forzacomponenti.com/documents.html



For vehicle specific instructions, go to <http://forzacomponenti.com/support.html>

1. The Exhaust Bypass Valve Controller

The Exhaust Bypass Valve Controller allows the driver to remotely control the exhaust bypass valves by intercepting the signal to the vacuum solenoid. The Model E3 controller provides two or three modes of operation.

1. **Normal Mode** ... In this mode, the controller allows the vehicle's ECU to control the exhaust bypass valves. This is the default mode.
2. **Always Open** ... The controller will intercept the ECU signal and keep the exhaust bypass valves always open.
3. **Always Closed** ... The controller will intercept the ECU signal and keep the exhaust bypass valves always closed.

Note: On Alfa Romeo, the always closed option is not available

You can use either the included remote control transmitter or a manual on/off switch that you can install inside the passenger compartment. Using either method, you can select any of the operational modes.

Installation does not require any wiring modifications or splicing into the car's electrical system. The unit is installed using the plug and play principal. If you are comfortable performing simple maintenance tasks on your car, you should not have any problems installing the kit yourself. If you are not comfortable performing maintenance tasks on your car, you should consult with your technician who performs the service on your vehicle.

2. Warranty

Forza Componenti warrants the Exhaust Bypass Valve Controller for 12 months after receipt of the unit. Any warranty claims must be made by contacting the company. During the warranty period, the company will repair or replace the unit. User is responsible for return shipping costs. Within the first 15 days after receipt of the unit, if the buyer wishes to return the unit, Forza Componenti will provide a full refund of the purchase price. User is responsible for return shipping costs.

3. Disclaimers

Every effort has been made to assure that the Exhaust Bypass Valve Controller will be compatible with the vehicle that the unit is to be installed. The user is responsible for assuring that installation and use of the Exhaust Bypass Valve Controller is compatible with the vehicle exhaust and engine management system. Forza Componenti shall not be responsible for any damages to the host vehicle arising out of the use of, or otherwise related to, the Exhaust Bypass Valve Controller.

Users are responsible for ensuring their own compliance with legal requirements concerning noise abatement in their area. Forza Componenti assumes no responsibility should your vehicle become out of compliance with any relevant laws and regulatory requirements due to installation of the Exhaust Bypass Valve Controller.

4. Exhaust Bypass Valve Controller Kit Contents

4.1 Included in the kit

The Model E3 controller kit contains:

- Remote Controller Module with Master Power Switch
- One Remote control transmitter (extra transmitters available)
- Connection cable
- 3M Dual Lock Mounting Tape

4.2 Not included in the kit

A manual switch if you plan to use it instead of the remote control transmitter



5. Check the Vehicle's Current Exhaust Bypass Valve Functionality. **DO NOT SKIP THIS STEP!**

- Ensure that the exhaust bypass valve(s) are functioning. Find the exhaust bypass valve(s) on your vehicle.
- With the engine off and no vacuum available to the exhaust valves, observe the default position – they should be Open.
- Start the car. The valves should close. *Note, some cars may leave the valves open at idle and very low RPM. Then, as engine RPM increases, for example in normal driving, the valves should close.*
- Once your engine reaches a predetermined threshold of engine RPM and throttle position, the vehicle's ECU should then open the valves.
- If the valve(s) do not perform as designed, you will have to determine the cause. It may be a faulty vacuum line, a faulty valve or vacuum solenoid or an electrical connection to the vacuum solenoid that may be at fault. Correct the situation before proceeding.

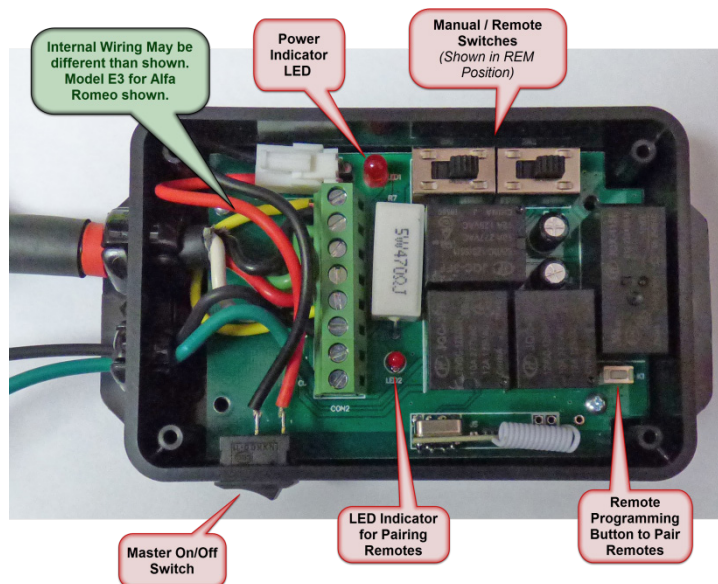
6. Configure for Remote Transmitter or Manual Switch Operation

The controller is shipped with the remote transmitter option enabled. If you wish to use a manual On/Off Switch, you will need to provide the switch and change the controller configuration as follows, otherwise skip to the next step.

The controller can be used with either the included remote transmitter or with a manual switch that you would provide.

The remote control transmitter option is easier to install as no additional wire needs to be routed to a switch. The downside is that you have the risk of potential loss of the remote transmitter and you may have to replace the battery occasionally. The manual On/Off switch requires that you route a control wire to a switch that you intend to use, but you likely have longer term reliability, no worries of misplacing the transmitter and no batteries to replace.

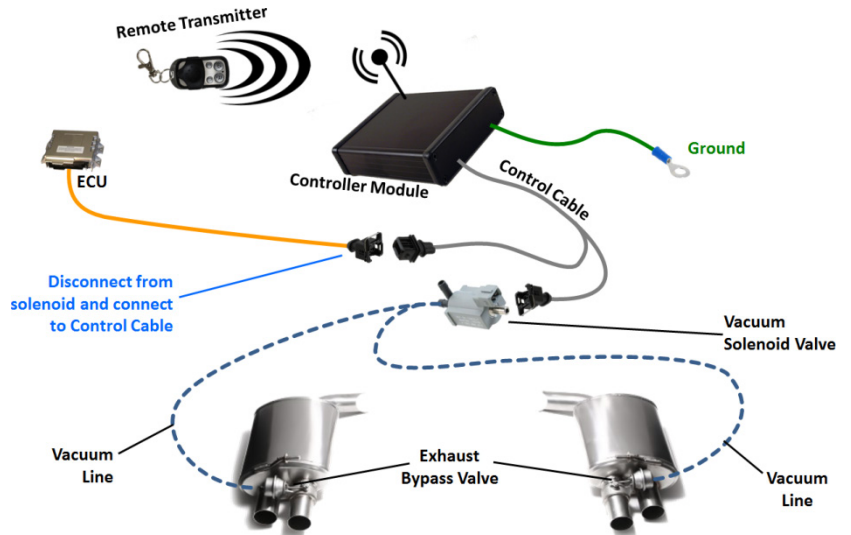
- Remove the lid from the controller
- Locate two small slide switch labeled "Rem – Man".
- Place **both** switches in the Man (manual) position. Note: once you position the switches in the Man position, your remote transmitter will no longer function as a control device.
- Reinstall the lid



7. Installation Steps

Follow these steps in the order presented.

1. Check the Forza web site for additional information and details ... <http://www.forzacomponenti.com/vehicles.html>
2. Check the vehicle's exhaust bypass valves function
3. Configure the Bypass Controller Module
4. Install wiring harness to vacuum solenoid valve
5. Install the ground wire to a suitable vehicle ground
6. Determine mounting position for the Control Module and route the connecting cable / connection wires to the control module
7. Finish installing control module and verify electrical continuity
8. Install manual control switches if you choose to use this option
9. Verify operation of Controller
10. Secure wires, gathering any excess while doing so, reinstall any panels you may have removed.



8. Check Electrical Continuity

Turn on the ignition. **Ensure the Master On/Off switch on the controller module is turned on.** The LED indicator light, visible when looking down on the controller lid should illuminate. If it does not, check the connections – ensure you have a good ground connection and verify correct polarity for electrical connections.

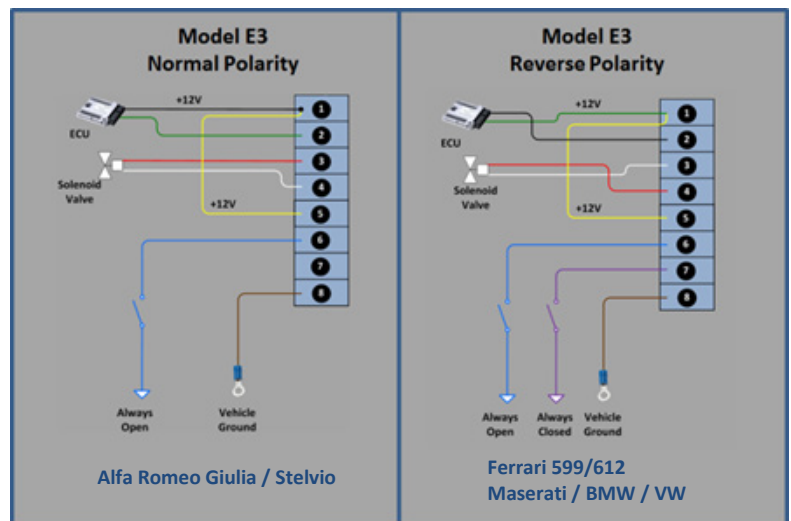
9. Electrical Polarity

The electrical polarity on various vehicles is not standardized. Refer to the following should it be necessary to change the electrical polarity of your controller.

9.1 Changing Electrical Polarity

With the vehicle ignition on and the engine running, the red power LED should be illuminated. If not, you may need to change the wires connecting to the circuitry board terminals.

- Disconnect power from the controller module
- Remove the lid from the controller
- Review the electrical diagram illustrations. If necessary, using a small screwdriver, loosen the terminals securing the wires
- The controller should be correctly configured. If, however, you suspect incorrect polarity, the wiring is as illustration here.





10. Determine Mounting Position for Controller Module

You may need to refer to the Forza website and additional documentation to help you determine a suitable location to mount the controller module. The chosen location should not expose the controller to moisture or excessive heat (less than 85° C or 200 °F). Temporarily position the controller.

11. Connect the Manual Switch Control Wires if Applicable, otherwise skip to next step.

If you intend to use the Manual Switch option, you must provide your own manual On/Off switches.

- Ensure that you have configured the control module for manual switch option. Refer to *Configure for Remote Transmitter or Manual Switch Operation* on page 2.
- Make the following connections:
 - **Blue wire for Always Open**
 - **Violet wire for Always Closed** (*not used on Alfa Romeo Giulia or Stelvio*)
- Splice into the blue & violet wires and route your wires to the contact on your manual switch. Ground the other contact to an appropriate ground. Refer to on *Manual Switch Options* on page 6 for more information.

12. Verify Operation of the Controller

With the ignition turned on, use the remote control transmitter or the manual On/Off switch; verify operation by pressing the buttons on the transmitter or the switch. You should hear a faint clicking sound of the relays opening and closing inside the control unit module. The default for the controller is ECU control.

The illustration at the right indicates button operation.



13. Complete the Installation

Tidy up connection wiring and secure the controller in its chosen location. Use cable ties or other suitable restraining devices to secure cables and wiring. Replace any panels or covers you removed in the installation process.

14. What is the “Always Closed” Option?

The Model E3 provides the option of Always Closed (*not on Alfa Romeo*). In normal conditions, leaving the vehicle under ECU control and maintaining lower engine RPM will generally close the exhaust bypass valves. However, there may be situations when you may want to completely disable the ECU from opening the valves. For example, if you track the vehicle and there are noise limitations in place at the track.

Note: When tracking the vehicle, the source of the vacuum (engine manifold) will likely have periods (which could be relatively long) when very low or no vacuum is produced to keep the bypass valves closed. This occurs when the throttle position is wide open. If you find that under wide open throttle positions your exhaust valves are opening, even though you have set the mode to Always Closed, you should diagnose the following:

- Check for any vacuum leaks. Check that if you pull a vacuum on the bypass valve actuators that they stay in the closed position until you release the vacuum.
- Check the vacuum accumulator tank is in good condition and does not leak. If you do not have an accumulator tank, you should install one.
- Is there a one-way check valve on the upstream side of the vacuum accumulator tank? There should be to prevent vacuum loss from the accumulator tank when wide open throttle. An in-line one-way check valve is simple and inexpensive to install.



Forza Componenti cannot guarantee that the Always Closed option will function under extreme conditions such as extended periods of time with wide open throttle as loss of vacuum is a physical characteristic of engine dynamics under these conditions. The loss of vacuum at the exhaust bypass valves may result in the valves opening. If your car is turbo charged or super charged, we do not recommend using the always closed mode except under low engine RPM.

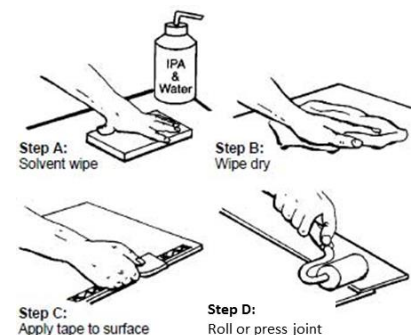
15. Troubleshooting

Indication	Possible Causes	Solution
Pressing remote button has no effect. You cannot hear the relays opening or closing inside the controller module.	<ul style="list-style-type: none"> Ground wire not attached to good vehicle ground. Fuse taps inserted wrong way causing reverse polarity The controller module is configured to use the manual switch option. The remote transmitter is not paired to the controller module. The remote transmitter has low battery 	<ul style="list-style-type: none"> Disconnect ground wire from current location and connect to a ground point that you are sure provides continuity. Check orientation of fuse tap. Reverse orientation and recheck to see if corrects problem. Check the operation switch. If necessary, change the configuration on the controller module to use Remote option. Pair the remote transmitter to the control module Replace battery in remote transmitter
The manual switch does not open or close the valves.	<ul style="list-style-type: none"> The controller module is configured to use the Remote option. The manual switch is not connected properly. Fuse taps inserted wrong way causing reverse polarity 	<ul style="list-style-type: none"> Change the configuration of the controller module to use Manual option. Check continuity of the wiring to the manual switch. Make sure the ground side of the switch is connected to a good ground point on the car. Check orientation of fuse tap. Reverse orientation and recheck to see if corrects problem.
The always closed option does not close the valves.	<ul style="list-style-type: none"> The manual switch for the Always Closed option is not connected properly. Loss of vacuum at the exhaust bypass valves 	<ul style="list-style-type: none"> Check continuity of the wiring to the Always Closed circuit. Make sure the ground wire is connected to a good ground point on the car. Check vehicle vacuum connections. Refer to <i>What is the "Always Closed" Option?</i> on page 4

16. 3M Dual Lock Fastening Tape

Included in your kit are two strips of 3M Dual Lock fastener material.

- 3M TB3560 Type 250 Dual Lock Re-closable Fastener
- Rated for use in severe environments
- Very good holding power and able to release and re-use
- Thoroughly clean both surfaces of dirt and oil using a solvent that does not leave residue such as isopropyl alcohol.
- Apply Dual Lock to both substrate surfaces.



Mount a strip on the bottom surface of the controller module. Lightly press the other strip on this piece ... just enough to hold in place. Now position the controller in place. Gently apply pressure to stick the mating piece in place on the mounting surface. This will assure proper alignment of the two Dual Lock pieces. Once positioned, you can take the controller off and then press the each piece on the mounting surface in place to assure a firm hold. Press each mounting piece on to the substrate. It will fully set in about an hour, but it should be fine to use immediately. Press the controller in place until you hear or feel a click.

Dual Lock Fasteners Attachment

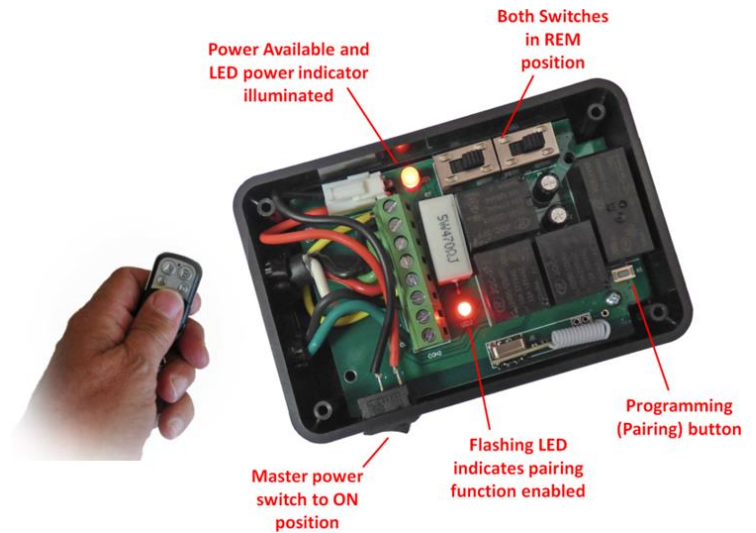


Press until you hear or feel a "click"

17. Adding or Replacing a Remote Transmitter

If you are adding or changing the key fob remote, you must pair the remote to control module receiver unit.

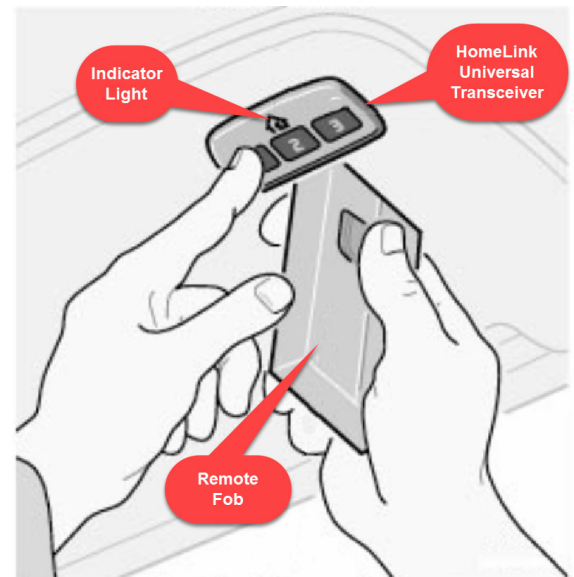
- Remove the lid from the control unit.
- Turn on the vehicle ignition to ensure power to the control unit. Ensure the master power switch is turned to the ON position. The red power indicator LED should be illuminated.
- Place both Man/Rem switches to the Rem position.
- While holding the key fob, momentarily press the pairing button on the printed circuit board. The LED should flash.
- If you press and hold the programming button for a few seconds, you will erase all memory of any transmitters. If this occurs, then you must re-program all transmitters.
- Immediately after pressing the learn button, while the LED is flashing, press a button on the remote transmitter. The LED on the control unit should go out.
- Your transmitter should now be paired to the control module.
- Repeat for additional transmitters.
- Verify operation of all transmitters and replace the control unit lid.



18. Using the Controller with Homelink Systems

The Homelink installed in the vehicle must support 433MHz. Some Homelink systems do not support this frequency (e.g., prior to 2014 in North America). The actual programming for the Homelink may vary by vehicle. Refer to your vehicle's owner manual for specific instructions on setting up the system.

In general, to program Homelink, press and hold the Homelink button you wish to program and hold until an indicator light slowly flashes. While the Homelink light is slowly flashing, hold the remote fob within a few inches of the Homelink. Press the transmit button on the fob for 3 to 5 seconds, then release and immediately press again. The sequence of pressing and releasing the fob button will prevent the fob transmitter from timing out before the Homelink can successfully clone the signal. Continue pressing and releasing the fob button until the Homelink indicator lamp goes solid or flashes rapidly. You will need to program one button on the Homelink for each function button on the transmitter fob.



19. Manual Switch Options

Installation of a manual switch to control the exhaust bypass valves is an excellent alternative to using the remote control transmitter as it will provide higher reliability and durability and eliminate risk of losing the remote control transmitter. However, routing a wire to a switch in passenger compartment and installing a manual switch requires more effort than using the remote transmitter. On modern vehicles, finding a location may be difficult. If you have an unused location, you can install a switch that matches the other switches on your car. Otherwise, you may wish to use a switch such a miniature toggle or rocker switch that you can install in an out-of-way location such as the center console or in the ash tray.

Placement of a manual On/Off switch is only limited by your imagination. Some alternative positions include under the steering column or the driver seat.



Round SPST On-Off Pushbutton Switch

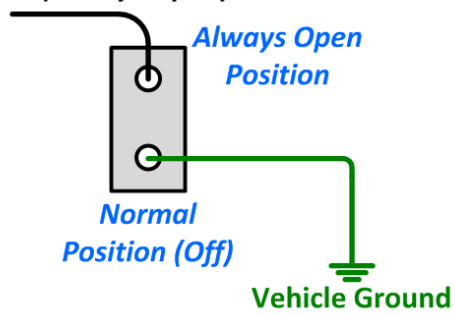


Miniature SPST On-Off Toggle Switch



Miniature SPDT Toggle Switch mounted in ash tray

To Black Wire on Controller Module (*Always Open*)





19.1 Controlling both Always Closed and Always Open with One Switch

If you intend to use a switch for the Always Open and Always Closed options, we recommend a 3-position, SPDT or DPDT switch. Here is an illustration of how you could utilize a one of these switches to control both the Always Open and the Always Closed functions with a single switch.

Sea Dog 40253-1 Illuminated DPDT
Rocker Switch On-Off-On

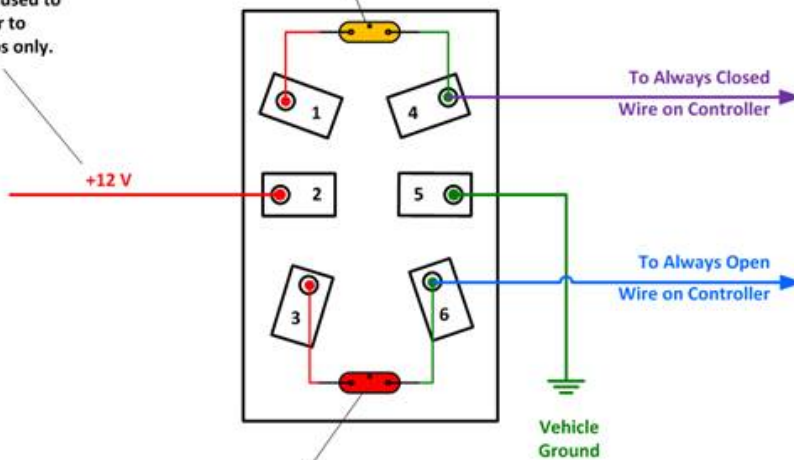


Parts Express Model 66-2257
SPDT Rocker Switch On-Off-On



Amber light is wired internally like this. Do not connect any additional external wires.

Tap into any suitable power source for +12V ... used to provide power to illumination lamps only.



Red light is wired internally like this. Do not connect any additional external wires.