

Product Name: BOV Kompact EM VR17
Product Description: BOV Kompact EM VR17 (4th Gen Yaris GR)
Product Number: TS-0223-1X77
Document Version: V1.00 Rev A



IMPORTANT NOTES ON YOUR BOV

- Turbosmart accepts no responsibility whatsoever for incorrect installation of this product which is potentially hazardous and can cause serious engine damage or personal injury.
- The EM series BOV is designed for use as a factory replacement for a turbocharger that utilises an electronic diverter valve, this valve can be used on other applications if there is a control signal to actuate the BOV.
- Ensure the engine is cold prior to installation.

RECOMMENDATIONS

- **Turbosmart recommends that your Blow off valve (BOV) is fitted by an appropriately qualified technician.**



KIT CONTENTS

Please check that the following items have been provided in your EM Series BOV packaging

Part	Description	Use
1	Turbosmart EM Series BOV	Main unit
2	3 x Allen Bolts	Allen bolts for mounting Kompact to mount

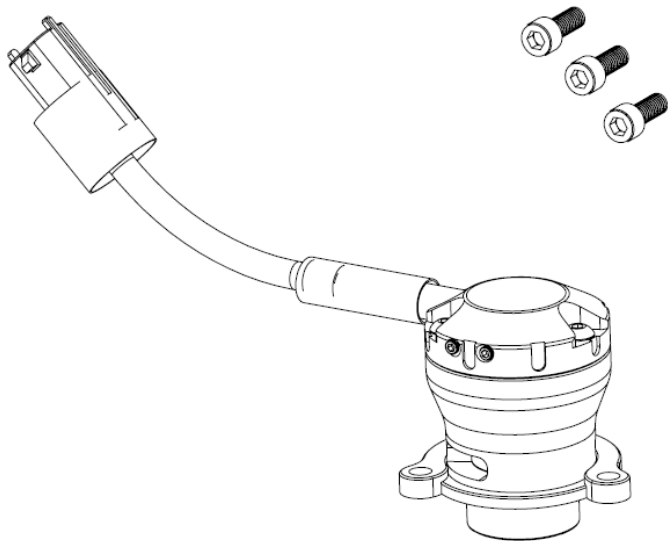


Figure 1 - Kit Contents

TOOLS REQUIRED

- Allen Key Set Metric
- Basic Socket set
- Torx Bits

ABOUT YOUR EM SERIES BOV

Turbosmart has developed a unique “plug and play” diverter valve (or bypass valve) upgrade for your vehicle that is currently equipped with an electronic diverter valve. While we have developed this unit to be as simple as possible for you to install, we have not compromised on performance. This unit will not leak under elevated boost pressures and will still provide you with rapid response ensuring that all the OEM calibration strategies are not interfered with, providing you with maximum boost performance while the advanced strategies of the OEM's are retained.

The EM series BOV is available in two configurations, Dual Port and Plumb Back. The functionality of the BOV is still the same, there is no performance difference between the two units, it is a personal preference if the user wishes to utilise a classic vent to atmosphere sound or revert all bypass gasses back into the inlet tract of the turbocharger.

As the valve is completely controlled by the factory engine control unit, the factory diverter valve is almost silent, due to our construction, it is possible that your EM series will be much more audible. By being able to hear the unit actuate, occasionally the valve may be opening for a few seconds under the following events such as traction control, cruise control management, rapid gearchanges and varying throttle position changes, these are all coded as part of the torque management software in the OEM engine control unit, there is no adjustment available over these functions via our product. By hearing these events, it is not abnormal, it is completely normal for the EM series BOV to be considered “very active” as it is protecting your turbocharger from surge events or bypassing air for torque management purposes.

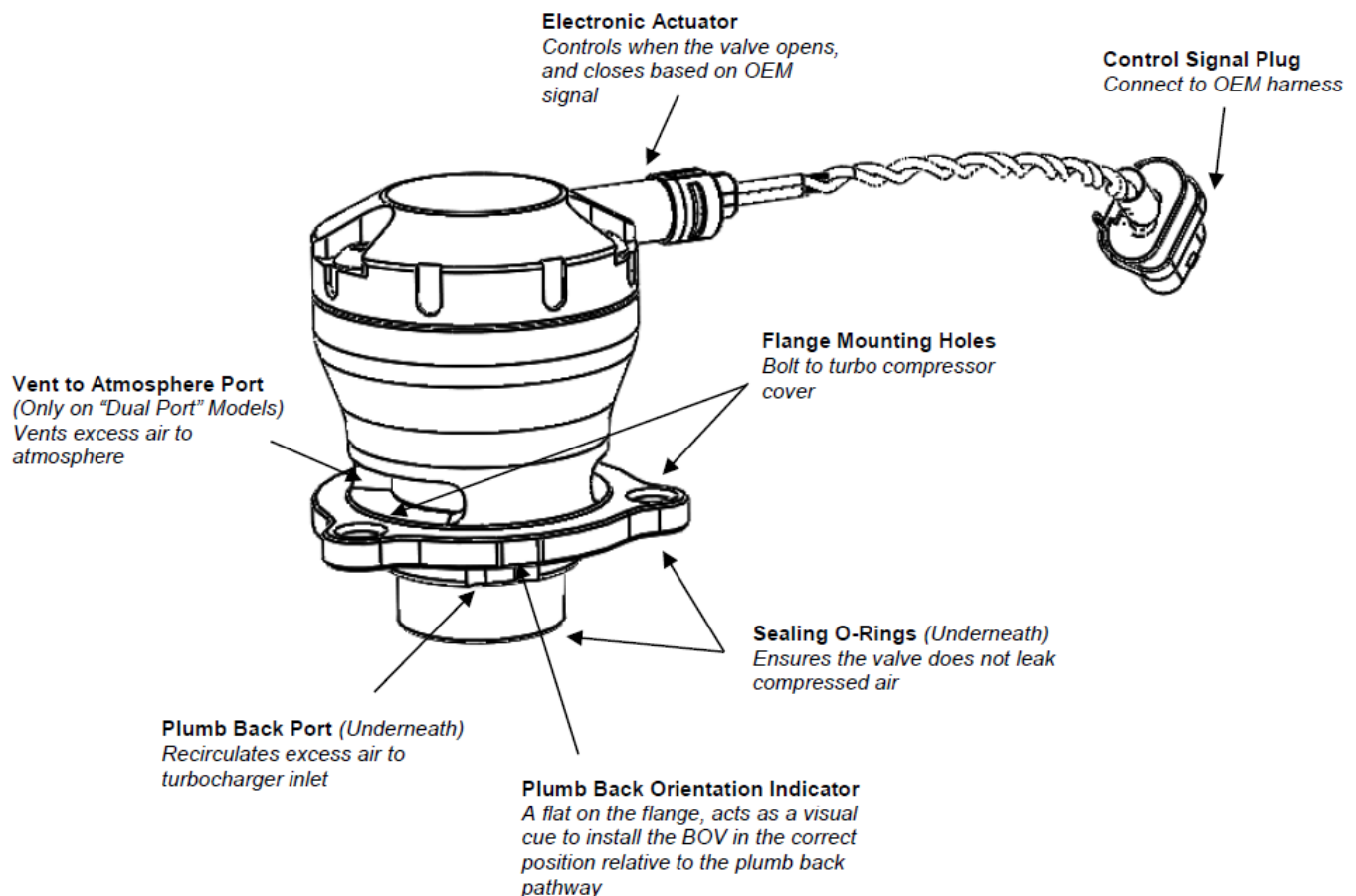


Figure 2 - EM Series BOV Overview

FITTING YOUR EM SERIES BOV

1

Identify diverter valve location.



On the model designation 4th Generation Yaris GR (XP210) the Diverter valve is located on the compressor cover housing. It is hidden behind the chassis rail in the right-hand front wheel well. It is located on the other side of the chassis leg. You will need to remove the wheel to gain access as well as the splash guard.

NOTE!

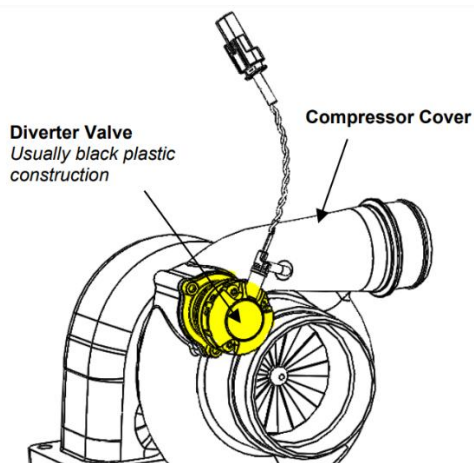
Allow for the engine to cool down.



If the diverter valve cannot be located, seek assistance from your local specialist.

NOTE!

It may be required to remove auxiliary components to access the diverter valve, ensure you consult your local specialist or a service manual for correct disassembly procedures.



2

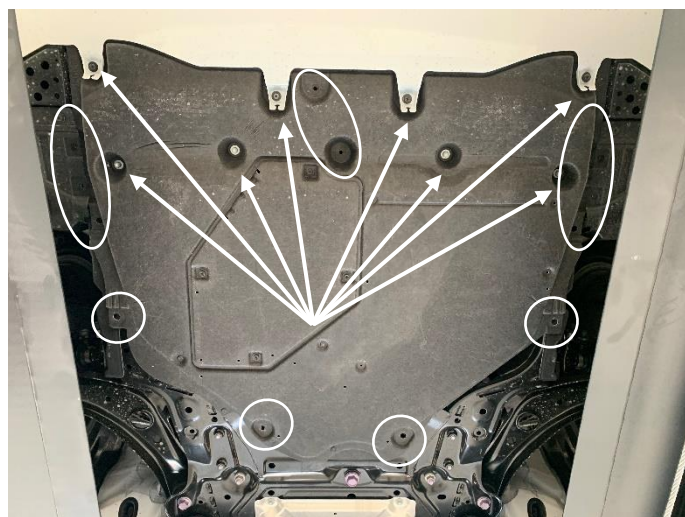
Removing the OEM Engine Splash Guard.

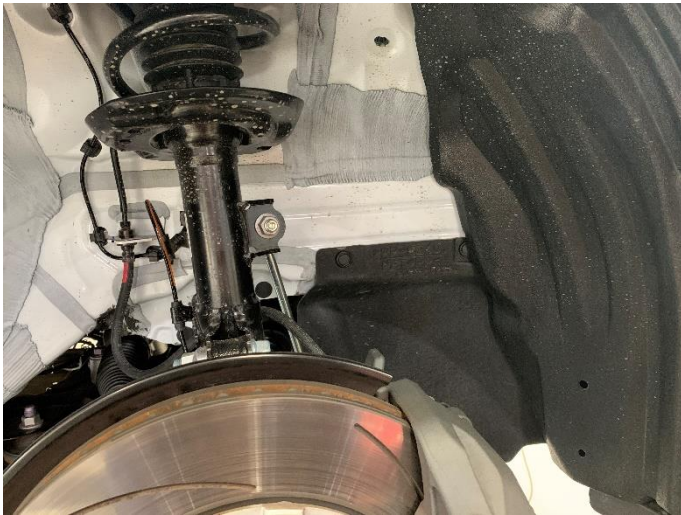
The Engine undertray and wheel guard panel will need to be removed. These interior fasteners are required to be flicked up which unlocks them and then pulled out. There is also 8 x 10mm fasteners running along the front of the engine undertray.

NOTE!

The complete floor is removed for ease of access.

It may not be necessary to remove the engine undertray panel. It is required on the bottom of the wheel well splash guard as this connects to the undertray.

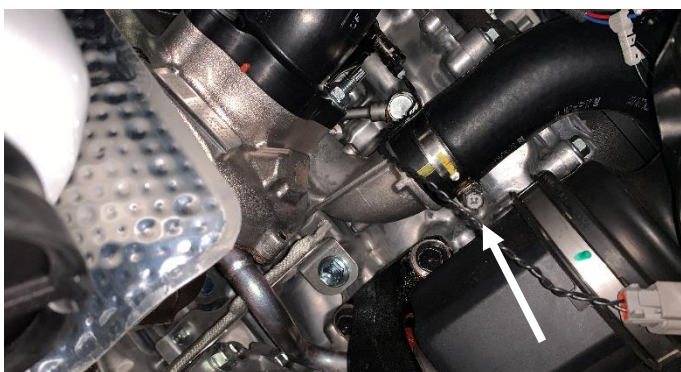




3 Removing the OEM Charge Pipe

The Charge pipe is held on with 2 x 10mm bolts on a bracket and 2 x 10mm hose clamps. One on the turbo snout and one near the front of the car near the bracket.

This can now be removed from out under the car and put in a safe place till reassembly.



Pictured above is the hose clamp that will need to be removed. It is located on the turbo snout.

4 Removing the OEM Turbo Inlet Pipe

Remove the Turbo Inlet Charge Pipe, this is fastened to the turbocharger with one 12 mm bolt and a 12mm nut. The stud will also have to be removed, it is removed with a E7 female Torx or 6mm socket.

The opposite end is fastened to another charge pipe, this is held on with a 10mm hose clamp. This is difficult to remove as there is no line of sight, a small ¼ inch ratchet works well in this area.

The charge pipe can now be removed.



5 Removing the OEM Diverter Valve

Next, remove the OEM Diverter Valve There are 3 x T30 Torx bits holding the valve on. Be careful not to drop these near the turbo inlet. With the bolts removed, remove the valve once slightly removed it becomes a lot easier to separate the electrical connector. It must be pushed down and pulled apart.

Once removed store the diverter valve and hardware in a safe place.

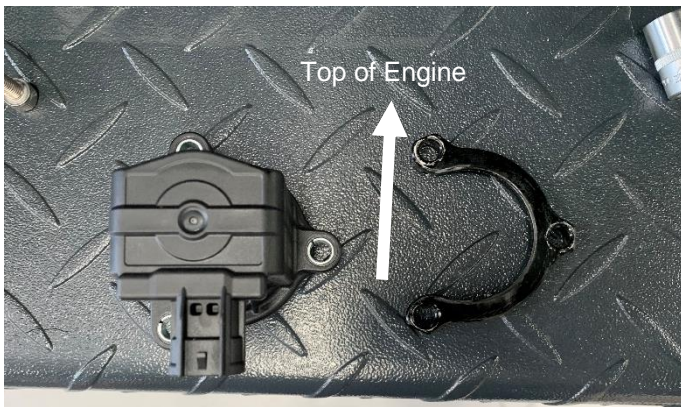


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Mounting your EM series BOV

Install the Turbosmart Valve , remembering that the install is the opposite of the removal. Firstly, install the new valve in place. Making sure that both O rings are present and in place, making sure they remain in place tightening them up. The original T30 bolts will be replaced by an Allen cap head bolt that uses a 5mm Allen key. Please consult your service manual for the correct torque specifications.

The orientation of the standard valve and flange give an indication of how they fit in the car. The arrow signifies the top of the engine. The body of the blow off valve can be orientated any direction due to the flange. It is important to note that it will want to foul with the turbo inlet and turbo charge pipe, as well as get in the way of the lower Allen bolt. Some care should be taken in planning clearance between those parts.



7

Connecting the Turbosmart Electrical connectors

Once the valve has been mounted, connect the electrical plug into the OEM factory plug and secure the wiring safely away from a heat source. Ensuring to hear a click of the connector locking together.

8

Connecting the OEM Charge Pipe

Place the OEM Turbo inlet can now go back in, the pipe will need to be wiggled onto the turbo charge pipe located behind the chassis rail. With that in place it can be checked with the 3 tabs around the circumference of the pipe ensuring that it has seated firmly and correctly.

Then the stud and 12mm bolt and nuts can go back on at the correct torque.



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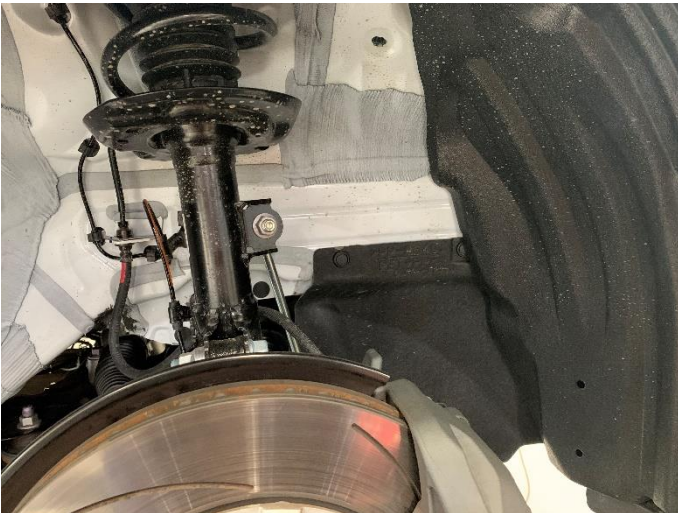
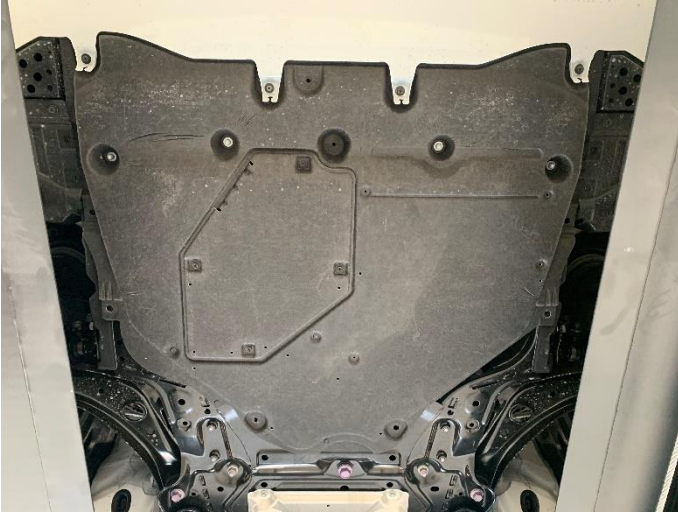
Installing Turbo Charge pipe

The charge pipe can now be installed, the pipe will need to be moved up from the bottom of the engine bay and into position, the two hose clamps and 2 x 10mm bolts will need to be tightened up once all-in position.



Fitting Engine Splash Guards

With everything back together the BOV can now be tested, with conformation that everything is working correctly. Fitting of the engine trays will be required to complete the install.



Testing your install

It is important to check for leaks and correct operation as well as listening for compressor surge. This noise is the sound of the boost pressure air running back into the turbo causing cavitation.

Now the car can be taken for a test drive in a safe environment and listen for the correct operation and that no turbo charger surge occurs.

CHANGING THE ELECTRONIC ACTUATOR

1 Remove Your EM series BOV.

Remove the electronic plug from the EM series BOV and loosen the hose clamps on the inlet and recirculation hoses. Remove the BOV from the vehicles

NOTE!

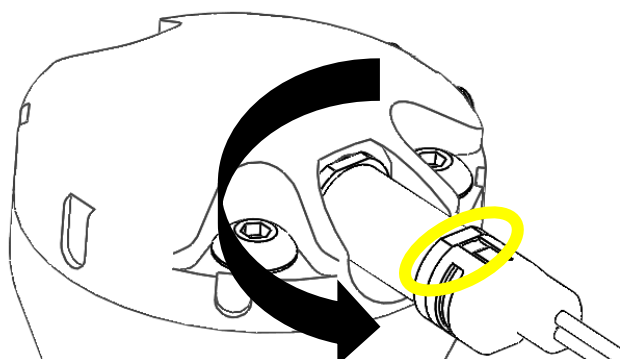
Cosmetic engine covers may be required to be removed prior to the assembly being visible.

CAUTION!

The turbocharger assembly may require the vehicle to be raised on a hoist or jacked up and secured using vehicle jack stands, ensure your safety is not compromised.

2 Remove Electronic Actuator from your EM series BOV.

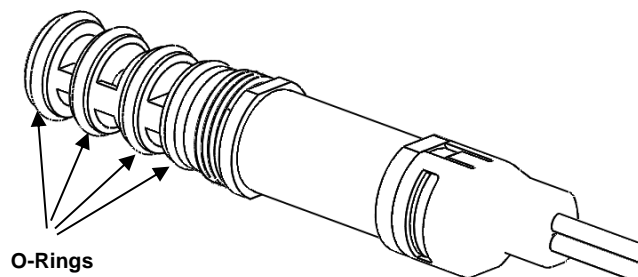
Using a 11mm open end wrench in the flat sides of the solenoid, undo the actuator in an anti-clockwise direction when viewed from the end. Ensure the wrench is placed on the metallic portion of the flats and not on the plastic cover.



Ensure the cavity is free from debris using avoiding shifting dirt into the passages.

3 Install New Electronic Actuator into your EM series BOV.

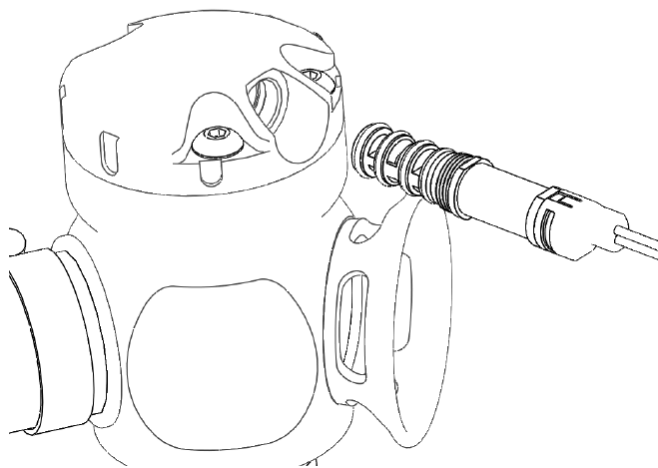
Ensure the O-rings on your new actuator are correctly seated in the grooves before installation.



CAUTION!

Failure to ensure O-rings are seated correctly may lead to cutting of an O-Ring and unexpected results from the EM series BOV.

Slowly insert the new actuator while turning in a clockwise direction to avoid tearing the O-rings.



Tighten the new solenoid into the EM series BOV ensuring the wrench is on the metallic portion of the solenoid.

NOTE!

Tightening the solenoid on the plastic cover may result in unreparable damage to the solenoid.

TROUBLE SHOOTING

- **It is important that any issues are resolved before heavy driving.**
 - BOV not actuating - Confirm electrical signal plug is connected appropriately, as the plugs are new, some force may be required to click the plug into place. The car will experience heavy surge if not actuating.
 - Valve is staying open – Confirm the valve has O-rings as they may have been dropped or lost during installation.
 - Boost pressure loss or lower than before - Confirm the valve has O-rings as they may have been dropped or lost during installation.
 - Failing the above, submit a technical request to tech@turbosmart.com.au with information of your engine configuration and photos of installation.
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