

Product Name: **BOV Kompact EM Dual Port VR23 - N20**
 Product Description: BOV Kompact EM Dual Port VR23 - N20
 Product Number: TS-0223-1X50
 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.
- For Standalone ECU configuration, ensure valve is not energised for indefinite periods of time as this can cause significant life detriment to the actuation solenoid.

RECOMMENDATIONS

- **Turbosmart recommends that your Blow Off Valve (BOV) is fitted by an appropriately qualified technician**
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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	Turbosmart Sticker	
3	3 x Allen Bolts (M6 Cap Screws)	Allen bolts for mounting Kompact to mount

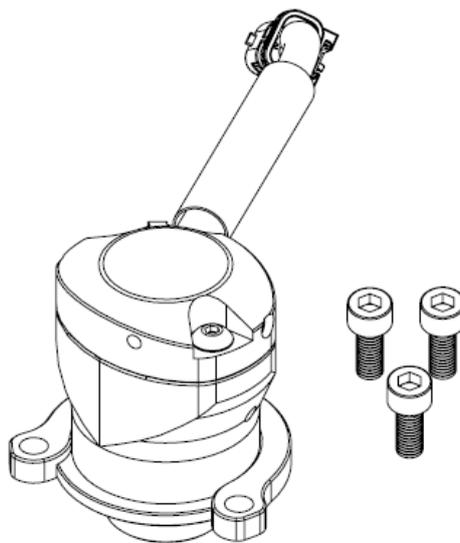


Figure 1 - Kit Contents

TOOLS REQUIRED

- 5mm hex key
- Screw drivers
- Pliers
- Socket Set
- Torq Bit Set

ABOUT YOUR KOMPACT 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.

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.

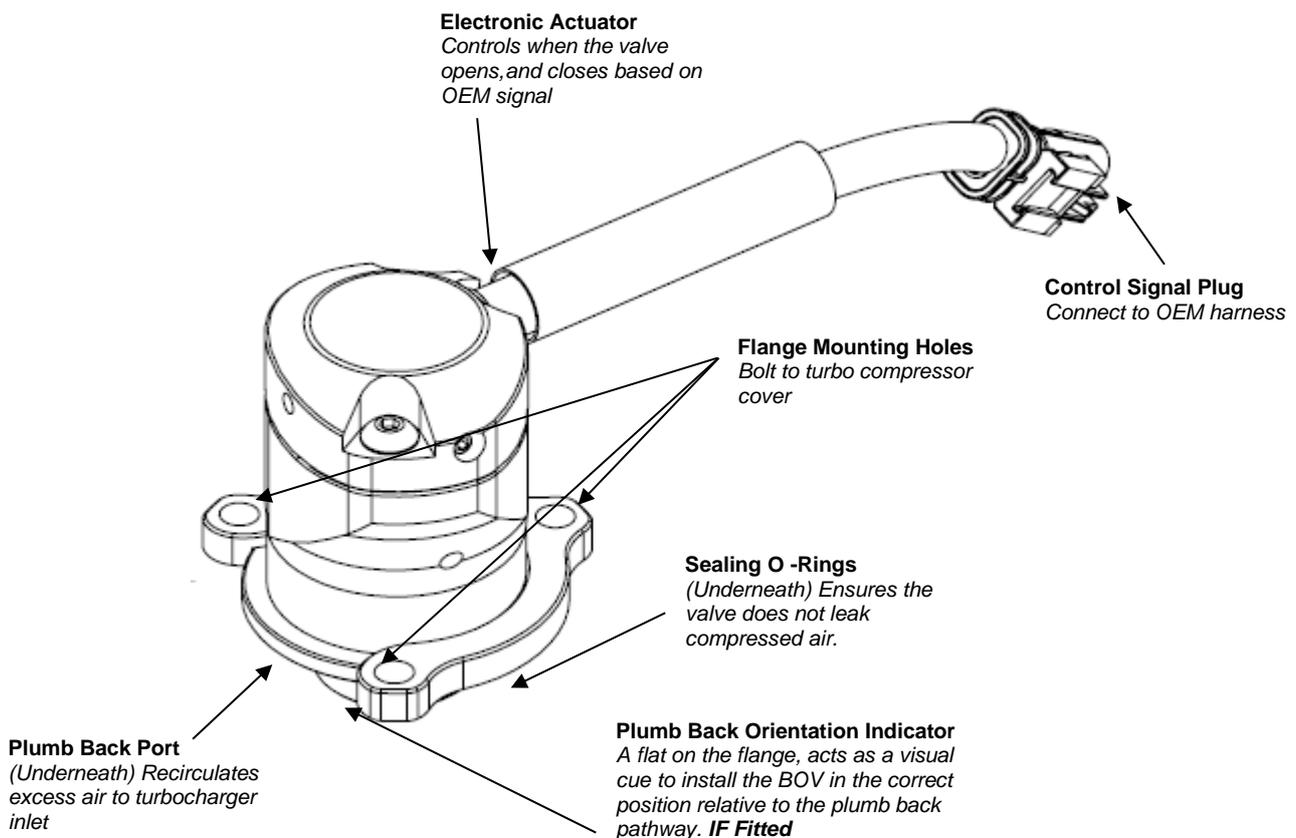


Figure 2 - EM Series BOV Overview
(Figure for illustration purposes only, actual product may vary slightly)

FITTING YOUR EM SERIES BOV

1 Identify OEM Diverter valve location

On the model designation 6th Generation BMW 3 Series (F30/1/4/5) N20 Engine the OEM Diverter valve is located on the underside of the side of the turbo. This engine is common in the BMW fleet and some applications might be slightly different.



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.



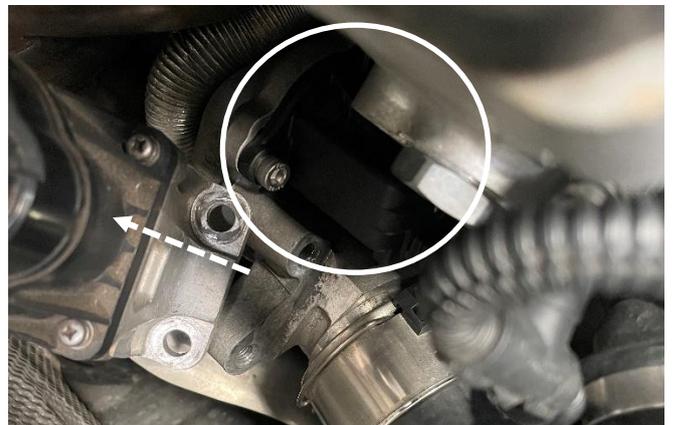
The intake has been removed for this photo to show the location of the BOV, although it is not necessary to remove for installation.

2 Removing OEM Electronic or Vacuum Wastegate

Removing the OEM Wastegate controllers although can be different are still held on via the same mount. This has two Torx 45 screws. These are located on the underside of the picture below. We also need to unclip the connector.



Here the wastegate actuator has been moved up to allow for access to the OEM Diverter Valve.



3 Removing OEM Diverter Valve

There are three T30 Torx bits holding the diverter valve, there are two bolts that are located on the back side close to the block, these are the hardest to remove.

The Clip has a grey tab that must be pulled back allowing the tab to be pressed down and removed.



4 Installing Turbosmart BOV.

It is helpful to remove the solenoid from the BOV to allow for ease during fitment, due to the swivel flange. We can move the BOV around to allow for some help during install, the bolt not pictured, located at the bottom should be the 2nd bolt to place in. Lightly taping the bolt to the Allen key allows for the bolt to stay attached to the tool as it is placed on. Once on, the third bolt can be placed on. Ensure not to tighten until all three Allen bolts are on this will make it a lot easier to install.



5 Installing Turbosmart BOV Electrical Connector

We the BOV in place and tightned up, we can now refit the solidond ensuring not to damage O-Rings will refitting. We need to have the solenoid pointing out allowing for install. We also need to install the Electrical connector. Ensuring that the connector seats correctly.



6 Refitting OEM Wastegate

We must now use the two T45 Torx bits to reattach the OEM wastegate to the car. Again, it is a lot easier to keep the first screw loose until the second one is attached. Once both in the wastegate can be torqued correctly.



7 Finalising 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 vehicle.

NOTE!

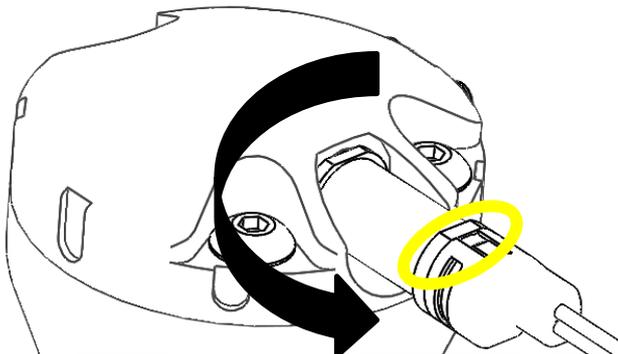
Cosmetic engine covers may be required to be removed prior to the assembly being visible.

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.

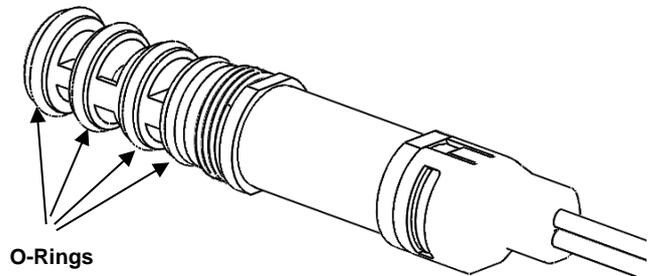
Using an 11mm open end wrench in the flat sides of the solenoid, undo the actuator in an anti-clockwise direction when viewed from the end. Ensure the wrench is placed on the metallic portion of the flats and not on the plastic cover.



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

3 Install New Electronic Actuator into your EM series BOV.

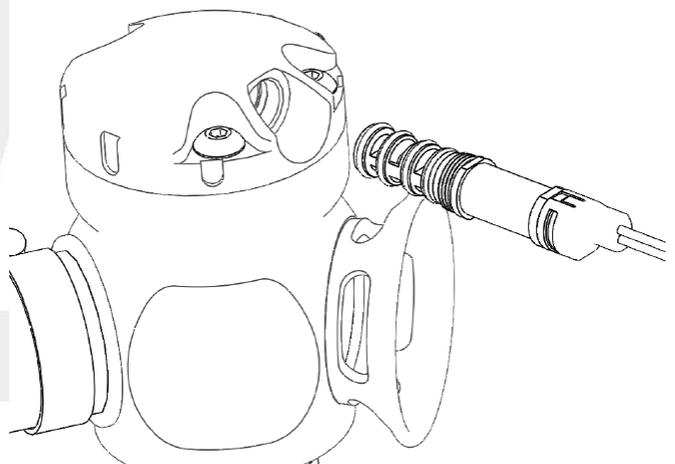
Ensure the O-rings on your new actuator are correctly seated in the grooves before installation. Also take note not to damage the O-Rings on burrs/threads during assembly.



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 unrepairable 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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