DINAN

HIGH PERFORMANCE THROTTLE BODY INSTALLATION INSTRUCTIONS

Part Number: D760-3800A

Applications: 2006-10 BMW M5 (5.0L V10)
2006-10 BMW M6 (5.0L V10)

PARTS LIST

Qty	Description
1	#1 Throttle Body
1	#2 Throttle Body
1	#3 Throttle Body
1	#4 Throttle Body
1	#5 Throttle Body
1	#6 Throttle Body
1	#7 Throttle Body
1	#8 Throttle Body
1	#9 Throttle Body
1	#10 Throttle Body
10	Rubber O-rings (for bases)
8	Hex Bolts (for actuating levers)
12	Hex Nut (for pinch bolts)
4	Fit Bolt (for throttle actuators)

PLEASE NOTE:
A high level of mechanical skill is required to install these throttle bodies. Proper installation of the throttle bodies requires **complete understanding** of the recommended BMW throttle body removal and installation procedures. If you are not familiar with this BMW procedure, we strongly recommend that you arrange for a qualified BMW repair facility to perform this installation.

- **IMPORTANT! The entire synchronization procedure is based on the correct positioning of the throttle stop screws on each throttle body. These are preset at Dinan in several steps using sophisticated measuring equipment. Please do not move these screws or the throttles will not be properly "synched". The Dinan warranty will also be voided if the throttle stop screws appear to be tampered with in any way!**

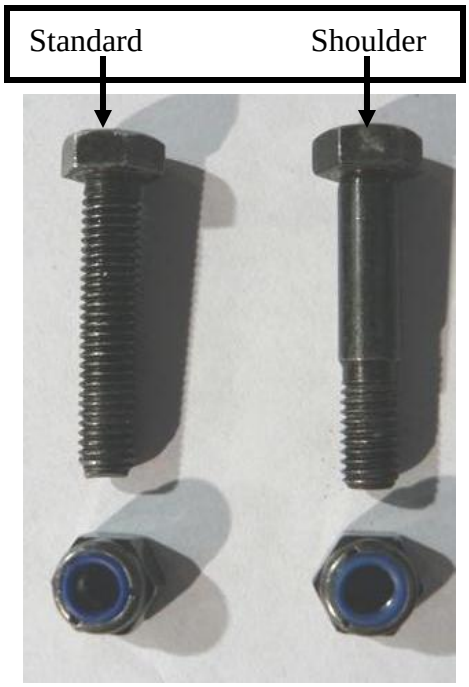
SPECIAL TOOLS:
- BMW Special Tool # 32 1 260 (or equivalent), is required for intake manifold removal and installation.
- BMW Special Tool # 34 3 171 (or equivalent), is required for releasing and tightening union on brake line.

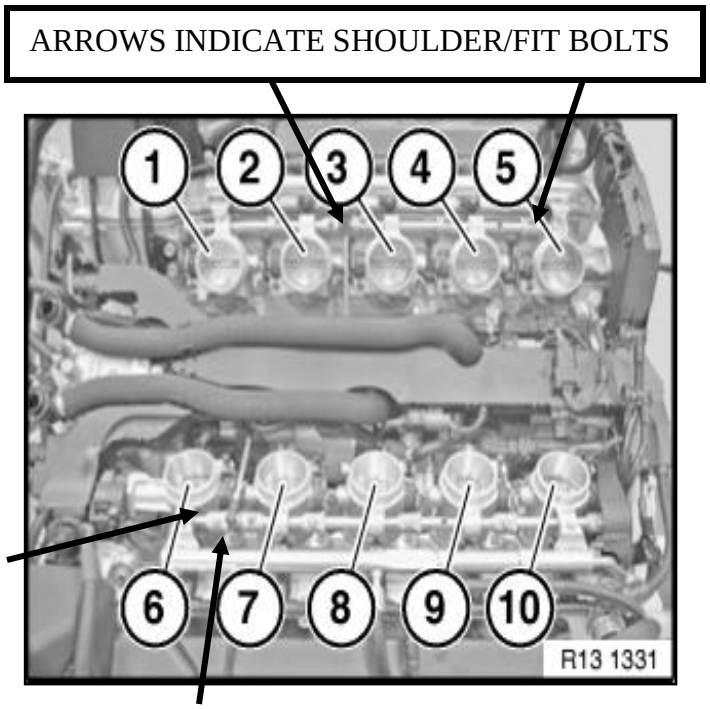
INSTALLATION

1. Read fault memory to assure no pre-existing throttle component codes exist, such as failed sensors.

2. Use BMW procedure **(TIS #: 11 61 050)** for removal and installation of intake manifold.

3. Remove the original throttle bodies following recommended BMW procedure for throttle body removal **(TIS #: 13 54 045). PLEASE NOTE** location of special shouldered Fit bolts on the throttle shafts. These special shouldered bolts are placed in 4 locations on the throttle actuation shafts. You will find these on CYL 5 and 6 throttle arms (throttle bodies with TPS mounted) and both of the actuation arms that connect to the EDK throttle motors. Please take note of their location before removal of throttle bodies. **If these shouldered bolts are not placed in the proper location during installation, you will not be able to properly synchronize basic setting and WILL cause throttle faults, misfires, & surging.**





4. You will need to remove the TPS's from your throttle bodies and install them on the new Dinan Throttle Bodies **AFTER READING THE FOLLOWING INSTRUCTIONS ON #5 & #6!** Be careful to not lose the two plastic shaft couplers that go between the throttle shafts and the TPS's. Also note how the plastic couplers index on the throttle bodies. It is easy to place them on the shaft 180 degrees out, **causing throttle faults and TPS faults**.

5. If TPS faults occur, most likely the plastic couplers are installed improperly. By checking throttle position % using GT1 or Autologic, you will most likely see one throttle bank at 0% and the other bank will not match and will be 20+%.

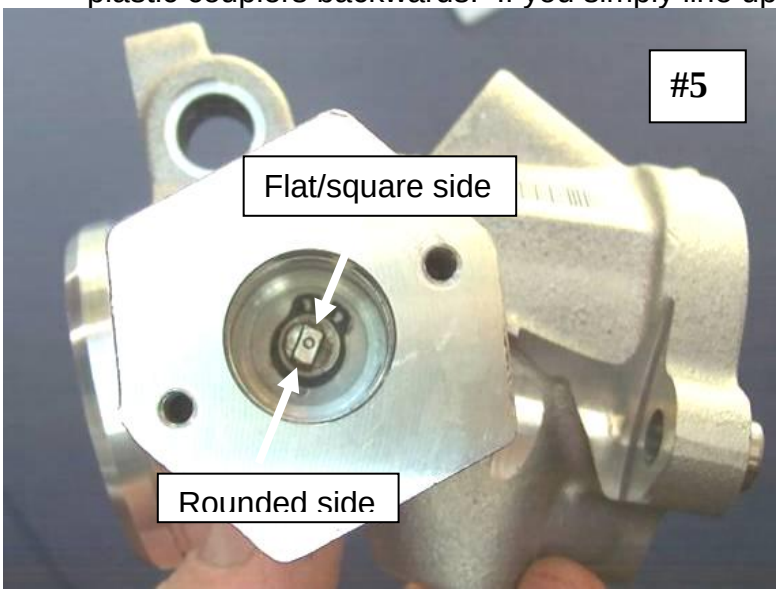
IDENTIFY THE THROTTLE BODIES

IMPORTANT! One critical item not explained in the BMW install procedure is that **you must first differentiate between the #5 and the #6 throttle bodies before reinstalling the Throttle Position Switch or TPS.** The only differences between **#5 & #6** are which way the TPS points, and which way the flattened end of the throttle shaft is positioned. The castings are the same. See photos.

6. See photos below. Note: the throttle bodies you receive will not have a TPS on them. Look closely at the close-up photo to notice that the shaft end has a flat end and a rounded end. You may need magnifying glasses (reading glasses) to see this, as it is a subtle difference. This rounded end is the best way to differentiate the **#5** from the **#6** throttle body. The direction the rounded end points will determine which throttle body it is.

7. **#5** is one of the two odd throttle bodies with a large cast boss for mounting the TPS. See the photo below showing the direction the throttle shaft end is positioned. You can also notice that the center of the shaft (center of machining rings) is always closest to the flat/square side.

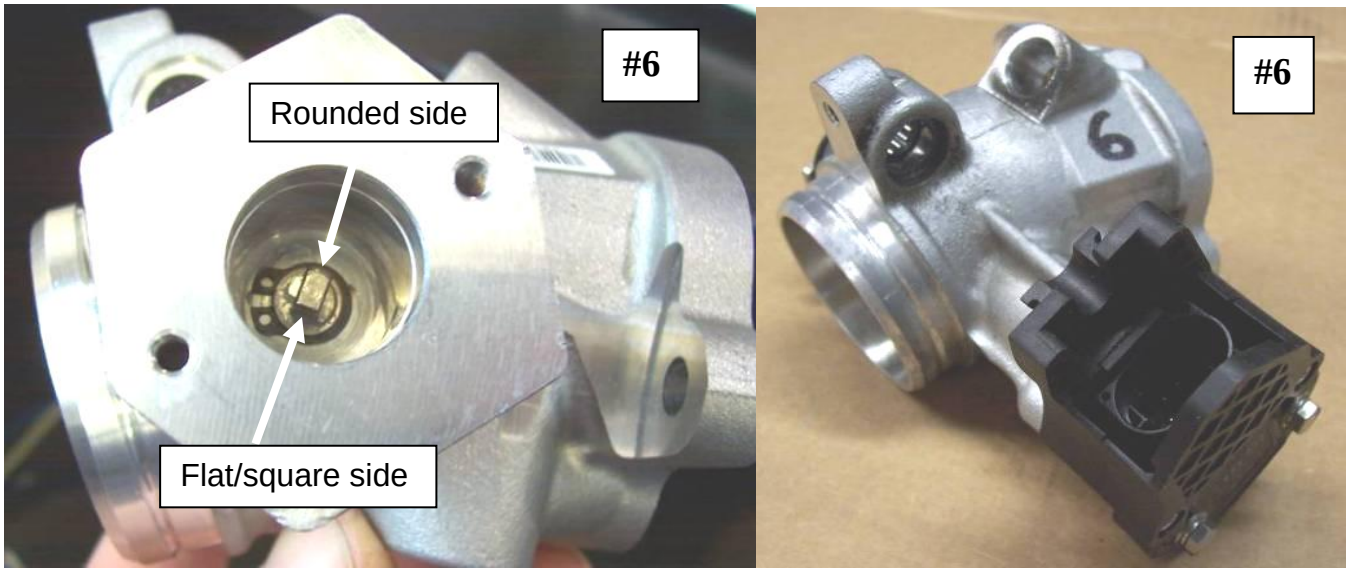
8. After determining the **#5** throttle body, you can mount the stock plastic shaft coupler and the TPS in the position shown. **Note that the plastic shaft couplers also have the flat side and the rounded sides that must be mated properly to the throttle shaft and the TPS, or the TPS will not be properly synched to the throttle plates.** Yes it is possible to install the plastic couplers backwards. If you simply line up all the flats and rounded ends you are fine.



9. **#6** is one of the two odd throttle bodies with a large cast boss for mounting the TPS. See the photo below showing the direction the throttle shaft end is positioned.

10. After determining the **#6** throttle body, you can mount the stock plastic shaft coupler and the TPS in the position shown. **Note that the plastic shaft couplers also have the flat side and the rounded sides that must be mated properly to the throttle shaft and the TPS, or the TPS will not be properly synched to the throttle plates.** Yes it is possible to install the plastic couplers backwards. If you simply line up all the flats and rounded ends you are fine.

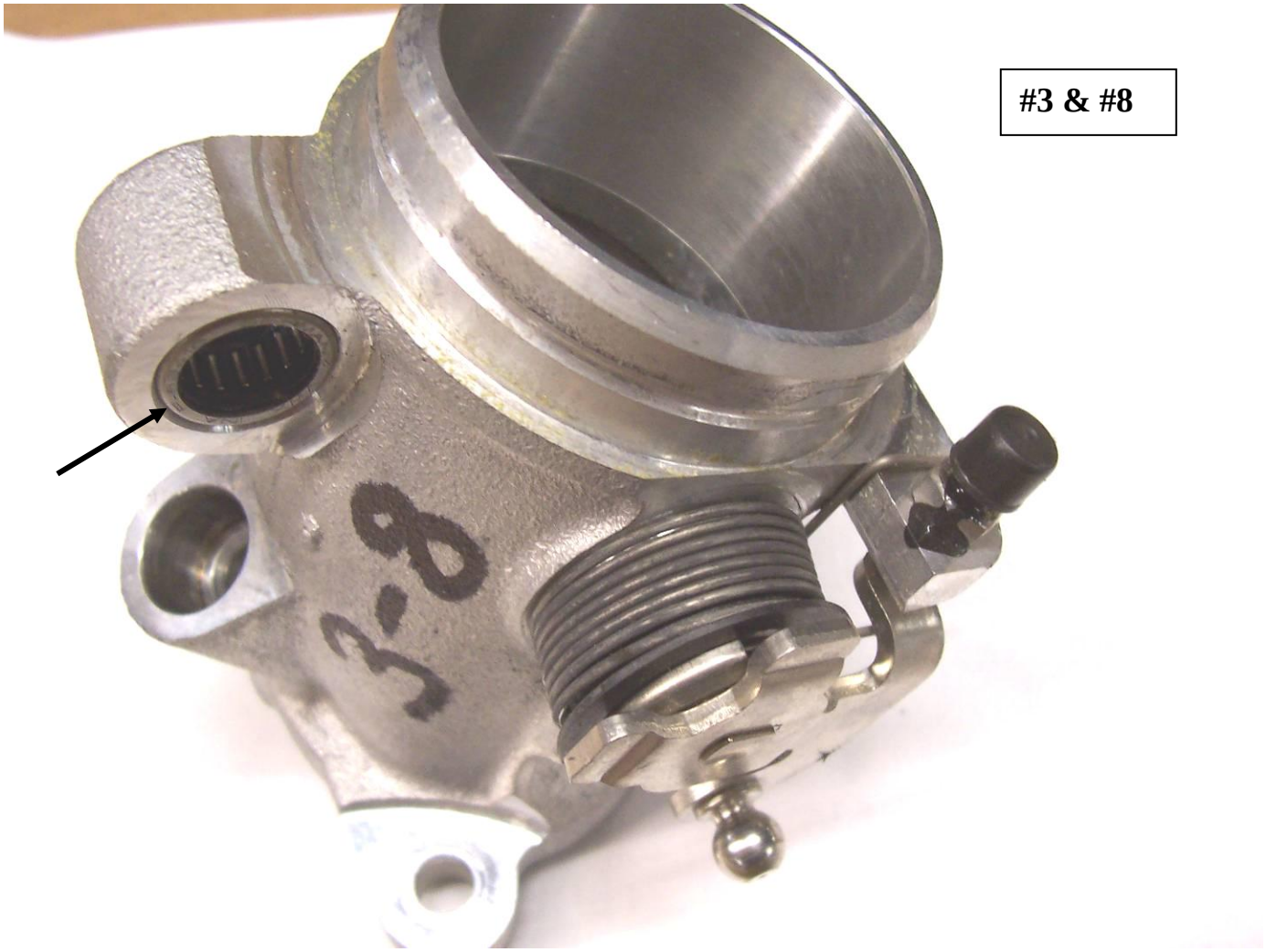
11. **AFTER INSTALLING BOTH TPS TO THE NEW THROTTLE BODIES**, you **MUST** check the throttle plates on #5 and #6 for binding. If the throttle plate binds or sticks after the TPS has been installed, the plastic shaft couplers are NOT installed correctly. Next you **MUST** use status request through the GT1 to see if the TPS are at or near 0%. If it is not, the TPS is 180° out. Recheck your work. Checking/correcting this now will save you hours of wasted diagnostic time when the car returns with faults.



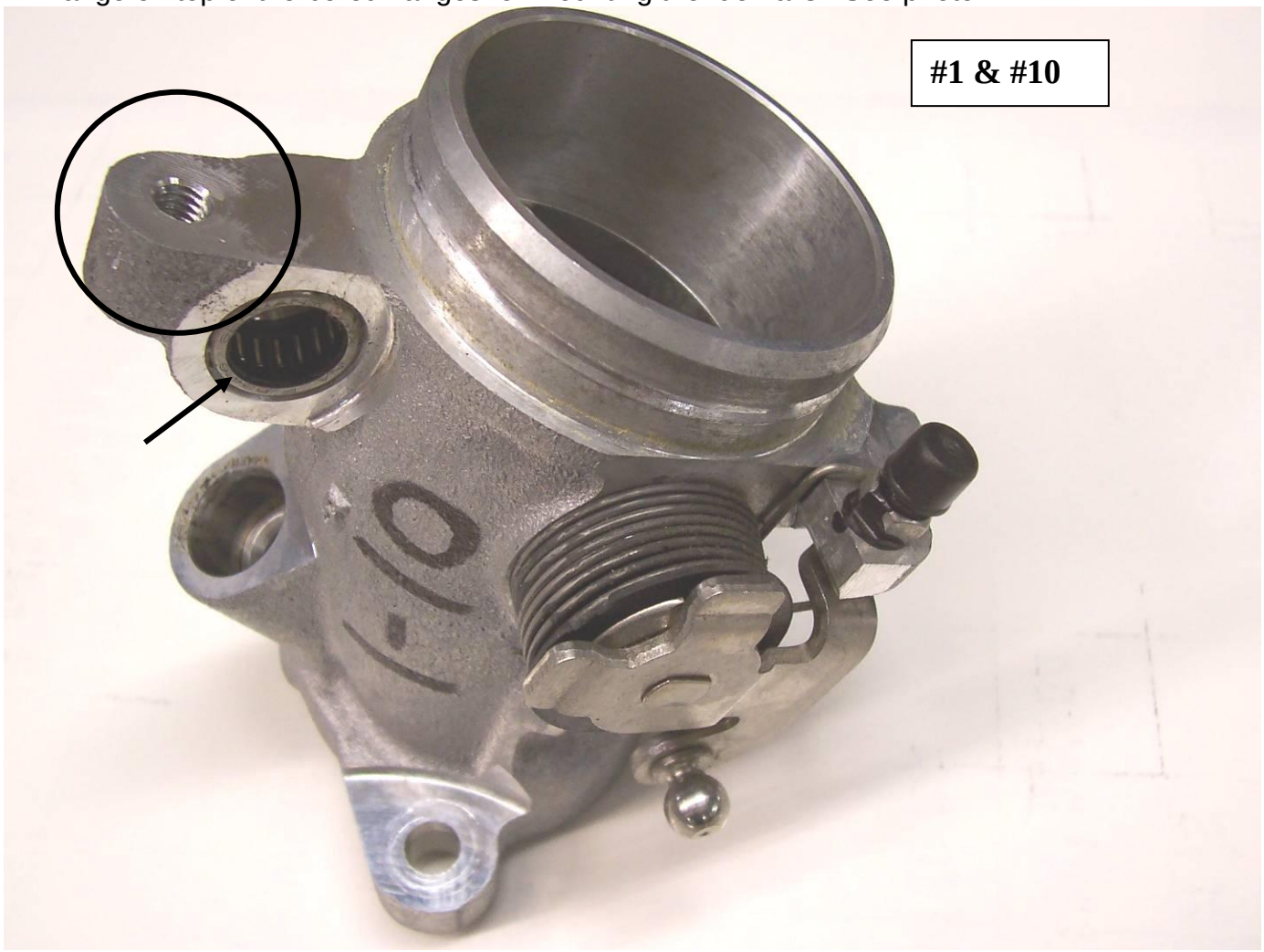
12. In addition to you checking the #5 & #6 throttle bodies we have our assemblers engrave the throttle body numbers in a location that can be seen even with the plenums installed. This can be a real time saver when trouble shooting a running problem. We would still like you to double-check our marks in the unlikely event we have marked them incorrectly. See examples below.

13. View the following photos to determine what cylinder #'s the different TB's should be marked as. There are only four versions of the TB's used on the 10 cylinder engine. They are grouped as follows: **#2, #4, #7 & #9** are the four most basic TB's without shaft bearings in the bored flanges atop the TB's. See photo. Notice that all ten TB's have the same linkage and return spring setup.

14. **#3 & #8** are two basic TB's with needle bearings (see arrow) in the bored flanges on top. See photo.



15. **#1 & #10** are two basic TB's with bearings in the bored flanges and an additional threaded flange on top of the bored flanges for mounting the fuel rails. See photo.



16. Install the Dinan Throttle Bodies using the BMW procedure (TIS #: 13 54 045). **The only difference between a Dinan throttle body and an original unit is the size of the bore and throttle plate. The installation procedure is exactly the same.**

17. Now is the time to make sure that the four special shouldered Fit bolts were installed in their proper locations as stated earlier (EDK arms and CYL 5 and 6 arms).

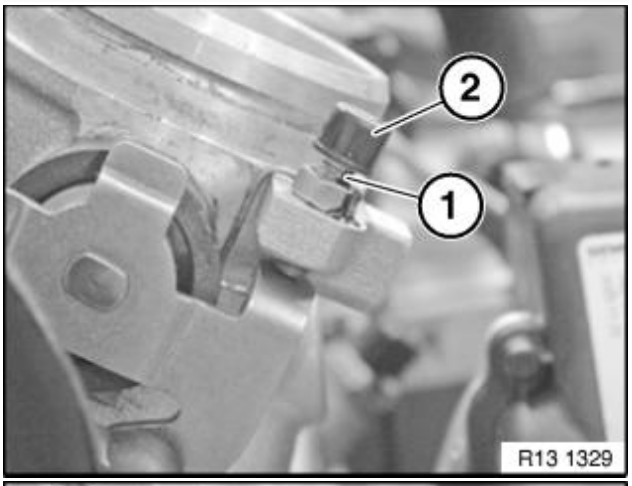
18. Use the BMW procedure when synchronizing the throttle bodies together (TIS #13 54 010). **Carry out adjustment with a second person if possible.**

PLEASE PAY ATTENTION TO THIS STEP CAREFULLY. IT IS CRUCIAL THAT THIS IS DONE CORRECTLY THE FIRST TIME.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL TECH SUPPORT (408-779-8584 ext. 115) AND WE WILL WALK YOU THROUGH THIS PROCEDURE.

Important!

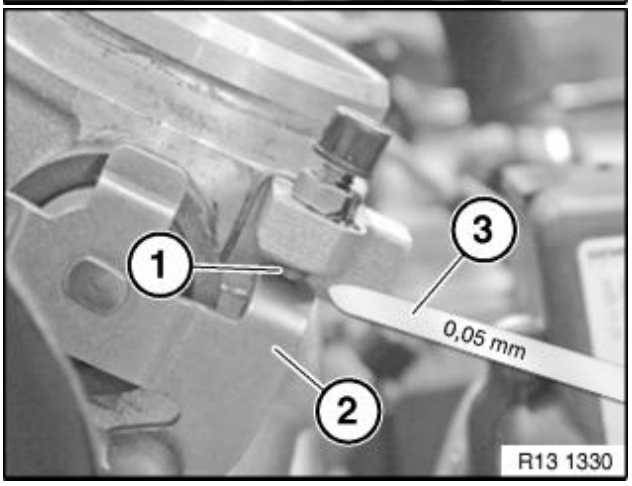
Idle stops of throttle valve assemblies must not be altered! They have been set at the factory and secured against turning with locking paint.



Important!

Do not adjust the throttle stop screws!

The throttle valve assembly **must be replaced** if the locking paint is damaged or the idle speed stop screw (1) is twilsted!



Do NOT adjust plate with feeler gauge between actuator and stop screw. Feeler gauge is ONLY used for checking adjustment after tightening bolts.

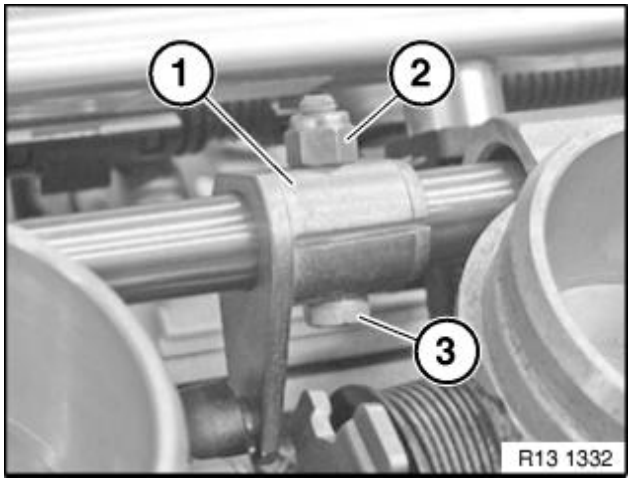
Gap between stop screw (1) and actuator (2) of throttle valve must be less than 0.05 mm.

To check gap, use a feeler gauge with a thickness of 0.05 mm.

Checking gap:

- Pull pull rod of throttle valve actuator in opening direction of throttle valves.
- Slide feeler gauge (3) between stop screw (1) and actuator (2) of throttle valve.
- Return throttle valves slowly to stops.

When correctly adjusted, feeler gauge will **jam** between stop screw (1) and actuator (2) of throttle valve. If there is not **Equal** and **Tight** tension on feeler gauge at all 10 throttle plate stop screws when you are done adjusting you must adjust accordingly.



Note:

In order to ensure correct throttle valve setting, you must slacken **all** the screw connections on the actuating levers with the actuating shaft **except** at throttle valve **assemblies 5 and 6**. (Replace nuts).

It is not possible to set the throttle valve at throttle valve assemblies 5 and 6.

However, if increased play is ascertained, the corresponding cylinder bank must be reset.

The actuating levers of throttle valve assemblies 5 and 6 are connected to the actuating shaft via fitting screws and fitting bores.

Do not slacken the screw connections of the actuating levers for the long pull rods.

The **long pull** rods must **not** be disengaged from the actuating levers for the setting procedure.

- Use nuts only once.
- When pretightening screw connection (approx. 5 Nm), hold actuating lever (1) of throttle valve in direction of arrow at "close throttle valve".
- Only turn nut and grip screw.
- To screw down, use two **open-end wrenches** which are to be placed at **right angles to actuating shaft.**

  In this way, no lever action is exerted on the throttle valve linkage; such torque would impair the quality of adjustment.
- After pretightening actuating lever, actuate throttle valve several times at full load.

  Perform check on each throttle valve assembly.

19. Reassemble the intake plenum assembly as per BMW procedure (TIS #: 11 61 050).

20. We recommend checking system for leaks with smoke machine, focusing on hoses in rear of the intake plenum which are easy to miss.

21. **During test drive** pay special attention to engine surging, misfires and for a check engine light. If they occur you must check your installation and basic setting. Common fault codes that result from an improper installation and setup are:

    -- Misfires
    -- TPS faults
    -- #2737 & #2738 Filling plausibility bank 1 or 2 cross-section not plausible
    -- #2771 & #2772 Oxygen sensor dynamic diagnosis before cat bank 1 or 2 reaction too slow

If any of these faults are present, then either the Shouldered Fit bolts are in the wrong locations, or the basic settings were not performed properly. Go back and check your work.

NOTE:
Your stock throttle bodies must be returned to Dinan Engineering within **30 Days** to receive your core refund. Please place the core voucher and throttle bodies in an appropriately sized box and use sufficient padding to protect them from damage during shipping. Insure the package and ship to:

Dinan Performance Engineering
Attn: Core Return
865 Jarvis Drive
Morgan Hill, CA 95037

Please call your Dinan representative @ (408) 779-8584 if you have any questions regarding your core exchange.