

****PLEASE NOTE**

Many components require fitting skills that take years of experience to acquire. Incorrect fitting could cause accidents and/or personal danger. If you do not own the correct tools or the necessary experience then entrust the job to someone who is qualified.

REMOVAL PROCEDURE

- 1/ Remove throttle bodies (TIP: Remove one throttle body at a time so parts don't get mixed and you have the other to refer to!)
- 2/ Remove throttle cables (undo throttle cable adjuster locking nuts - 10mm spanner size)
- 3/ Remove throttle position switch (TPS) on LH throttle body (TIP: mark position of TPS bolts so you have rough starting point when refitting)
- 4/ Remove steel blanking cap from RH throttle body (these are crimped on so you will have to put in a vice with 'soft jaws' and use sharp screwdriver or chisel to remove the cap)
- 5/ Scribe top of throttle butterfly and mark where shaft sits before undoing butterfly screws. The butterfly only works one way. Feel what the opening and closing action of the throttle body is before stripping apart. If refitted incorrectly you will find butterfly won't fully close
- 6/ Undo butterfly screws with a good screw driver Use correct size for screw slot to avoid damaging screws
- 7/ Use outer lever to open throttle and slide butterfly from slot in shaft when in fully open position.
- 8/ Check the positioning of the outer workings of the throttle shaft and pay attention to where the butterfly shaft spring attaches and where the plastic inner spring plastic collars are situated. TIP: Take photos for reference when fitting the new cam
- 9/ Remove small circlip on opposite end of shaft from the cable cam NOTE: there is a small nylon washer under the circlip that has to be refitted when shaft and circlip are replaced – DO NOT throw away or lose!
- 10/ Remove shaft from the throttle body (**Take care not to lose spring or the two plastic spring inner bushes**)
- 11/ Remove the cracked or broken plastic cable cam from the shaft.
- 12/ Place shaft in vice using soft jaws to avoid damage or marking of shaft. Place shaft in a position so as to not squash the slot where the butterfly is fitted. This could lead to shaft damage and there is no new replacements for these!
- 13/ Carefully break plastic cam from butterfly shaft to expose the metal shaft inside. This can be done with a Dremel and cutting disc or small hacksaw (Pliers will also suffice). Work slowly as this step is to simply remove the plastic remains of the damaged cam. ****Take care not to damage the lever or shaft!**

REFITTING PROCEDURE

- 1/ Replacement cam location should be as per sitting on motorcycle facing forward. Marked L for Left + R for Right on new cam.
- 2/ Slide butterfly shaft through new cable cam with U shaped slot on outer side.
- 3/ Push butterfly shaft actuator (the part that was covered in the plastic) into the U-shaped slot. This should be a slight interference fit.
- 4/ There should be no movement between shaft actuator or slot in new cable cam as any movement it will affect the synchronisation of the throttle bodies
- 5/ Slide butterfly shaft back through the throttle bodies making sure you have fitted the return spring and plastic inner bushes. There are two bushes that keep the return spring in the correct position. Refer to photos you took when throttle body was stripped!
- 6/ Fit small nylon washer and new circlip on outer side of butterfly shaft to secure in position.
- 7/ Refit the butterfly through the slot in the shaft making sure it's the correct way around and in same position
(Check the markings you made before removal)
- 8/ When the butterfly is in what looks to be the correct position, fit the shaft countersunk screws but do not completely tighten. Apply enough tension to hold the butterfly to the shaft in position so you can check that the movement is correct and you have full movement from vertical to horizontal to the throttle body stop. **Please note this is a very important step as if not in the correct position the motorcycle will not run smoothly!**
- 9/ Once butterfly is in position, tighten the countersunk butterfly securing screws with the butterfly in the closed position so it does not move. Use a good quality thread lock that is not affected by fuel! Always use a good screw driver that is the correct size
**** Another important step - avoid overtightening as this could cause stripped threads or they could come loose and get sucked into the motor and cause severe engine damage!**
- 10/ Once the screws are properly secured, move the throttle shaft back and forward from idle to full throttle position. It should feel smooth and operate the same as it did before stripping. If unsure then compare with the other throttle body.
- 11/ If all seems ok, refit throttle body steel blanking cap on RH side of throttle body using a soft hammer, and refit the TPS (throttle position switch on LH) As discussed earlier, you should have marked the TPS at the beginning, so you should be able to line the marks up and refit in the original position. ****This should be checked for exact positioning with BMW diagnostic machine as soon as possible!**
- 12/ Refit the throttle cables and throttle bodies to original position.
- 13/ Actuate throttle several times to ensure smooth movement without sticking and return idle position.
- 14/ Synchronise throttle bodies with vacuum gauge.