



# **BMW M30 ITB Kit**

## **Assembly instructions**

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## NOTES:

Thank you for choosing an RHD ITB Kit. All RHD parts and products are designed for performance and racing purposes, what you do with your vehicle is your responsibility and no liability will be taken by RHD Engineering for your actions.

Slightly larger injectors are strongly recommended. This kit is designed to work with a stand-alone ECU configured with Alpha-N. This will always bring the best results. Do NOT try to use MAP signal for tuning ITB systems. Most quality ECU brands will have no problem running pure Alpha-N. However some lower end brands may struggle with resolution so a combination of TPS and MAP is needed at the very least. We recommend and sell EcuMaster products as an affordable high quality ECU and we can offer support and tune files for all our ITB kits.

The throttle bodies are made to very tight tolerances and have been PRE-SET for normal engine running temperature. They may feel a little bit tight or sticky when fully closed. This is perfectly normal DO NOT try to adjust them.

To install and set up this kit you will need an e36 TPS (PN 13-63-1-726-591-M375) and slightly longer throttle cable we suggest a 318 4cyl e36 cable. (PN 35411162482) some 8mm vacuum hose, a basic understanding of mechanical devices and the appropriate mechanics tools

Please check all the parts are included and contact us immediately if you have any pieces missing.

Manifold	3 pcs
45mm ITBs	3 pcs
Trumpets	6 sets
Trumpet spacers	6 pcs
50mmx2mm O rings	12 pcs
Linkage brackets	3 pcs
M5 drop link set	1 set (2 rod ends, 2 nuts, 1 link, 2 cap screws)
Spring balance adjuster	2 pcs
Flat arm coupler	1 pc
TPS fixing plate and screws	1 pc
Cable quadrant	1 pc
ITB master lever set	1 set (Idle stop, screw, secondary spring)
Short lever	1 pc
8mm linkage shaft	1 pc
Return spring set	1 set (1 spring , 2 locking bosses)
M5 x 12 Hex bolts	2 pcs
Fuel rail	1 pc
Fuel rail brackets and bolts	3 pcs each
Fuel rail fittings	3 pcs
9 port vacuum block	1 pc
8mm x 1/8 bsp hose tails	11 pc
8mm x 1/4 bsp hose tail	1 pc
12mm x 1/4 bsp hose tail	1 pc
Tee fitting 1/4 bsp MMF	1 pc
6mm x 1/8 bsp hose tail	1pc
4mm x 1/8 bsp hose tail	1 pc
16mm x 3/8 bsp hose tail	1 pc
ICV/ CCV hose patch fitting	1 pc
M8 x 25 cap screws	12 pcs
M6 x 20 cap screws	24 pcs
M5 x 16 cap screws	10 pcs
Plenum backing plate	1 pc
ICV hose patch fitting	1 pc
Thermostat replication plate	1 pc

### Assembly Procedure:

Install the adapter and the TPS onto the last throttle body before you install anything else. Ensure that the TPS is positioned so that the throttle can move freely from the closed to fully open position. Plug the wires into the TPS and turn the ignition on. With the throttle fully closed measure the voltage with your ECU software or a multimeter between the wires going to pin 1 & 2 on the plug. Adjust the position of the TPS so that the voltage is about 0.5v when the throttles are fully closed.

Assemble the throttles as per the following pictures, leaving the balance adjusters only slightly tight. Adjust the balance adjuster screws so they protrude about 2mm towards the J spring. Install the manifolds and attach the throttles. Install the linkage mounting bracket on the centre throttle. Push on all the throttles with your finger to make sure they are all fully closed and tighten the clamp on the balance adjuster. Next install the linkage and idle circuit parts and hoses. Install the spacers only, no backing plate, trumpets or plenum for the moment.

Now you can start the engine and synchronize the throttles, you might need to block the inlet of the ICV for it to run and idle. Use the outer throttle cable adjuster to tension the cable until the engine is running at least 1000rpm. Allow the engine to warm up to normal running temperature before synchronizing.

**Adjusting the balance is EXTREAMLY sensitive and near perfect synchronization is essential for smooth idle and good light throttle driving. To do this you MUST use a flow synchronizer such as the one pictured. Measuring vacuum is not a good indication of flow.**



Press the synchronizer into each spacer. Adjust the balance couplings until the flow into each runner is exactly the same. Adjust the cable back down so the throttles are fully closed again.

### Assembly Notes:

Study the following drawings very closely they show the exact placement of all the fittings and linkage parts. The small return spring on the master ITB is only intended as a SECONDARY spring to ensure the throttles close should any linkage part become loose or disconnected. A second main return spring is included this can be preloaded up to a maximum of 180 degrees to add the desired amount of pedal resistance.

For nice progressive throttle action keep the drop link as long as possible. However if your ITB does not reach full throttle when the pedal is fully depressed then adjusting the drop link to a slightly shorter length and resetting the cable slack will alter the mechanism gain and will enable the throttles to reach full open.

Make sure the linkage moves freely and smoothly without any binding. Light lubricant such as WD40 on moving parts is good. It is important the ITB linkage doesn't reach full throttle when there is still lots of extra travel on the pedal this will overload your cable and linkage resulting in possible damage or premature cable failure.

You will need to drill some holes in the plenum and /or backing plate for the Inlet Air Temperature Sensor and also the patch fitting for the Idle Control Valve inlet hose. If you are using the std ECU it is important that the ICV draws metered air AFTER the AFM sensor.

Crank case breather can also be plumbed into the plenum or alternatively run to a vented catch can mounted in the engine bay.

### Plenum:

Assemble the backing plate and trumpets to the spacers. Make sure the base clamps on the outer 2 trumpets are facing inwards. Then remove the entire assembly from the throttles. Bolt the plenum to the backing plate off the engine and fully tighten all the screws. You can use RTV type sealant or make a compressible gasket between the backing plate and plenum but its not essential. Install the whole assembly with plenum back onto the throttles again. Start all the screws before any of them are tightened.



### Thermostat Housing:

Kit includes a plate that relocates the thermostat housing slightly to give clearance for the radiator hose and first throttle body. However the sharp corner of the throttle body housing could puncture or cut into the hose so grinding the corner away is recommended. See picture below. This won't be seen after installation and does not have any effect on the ITB operation.

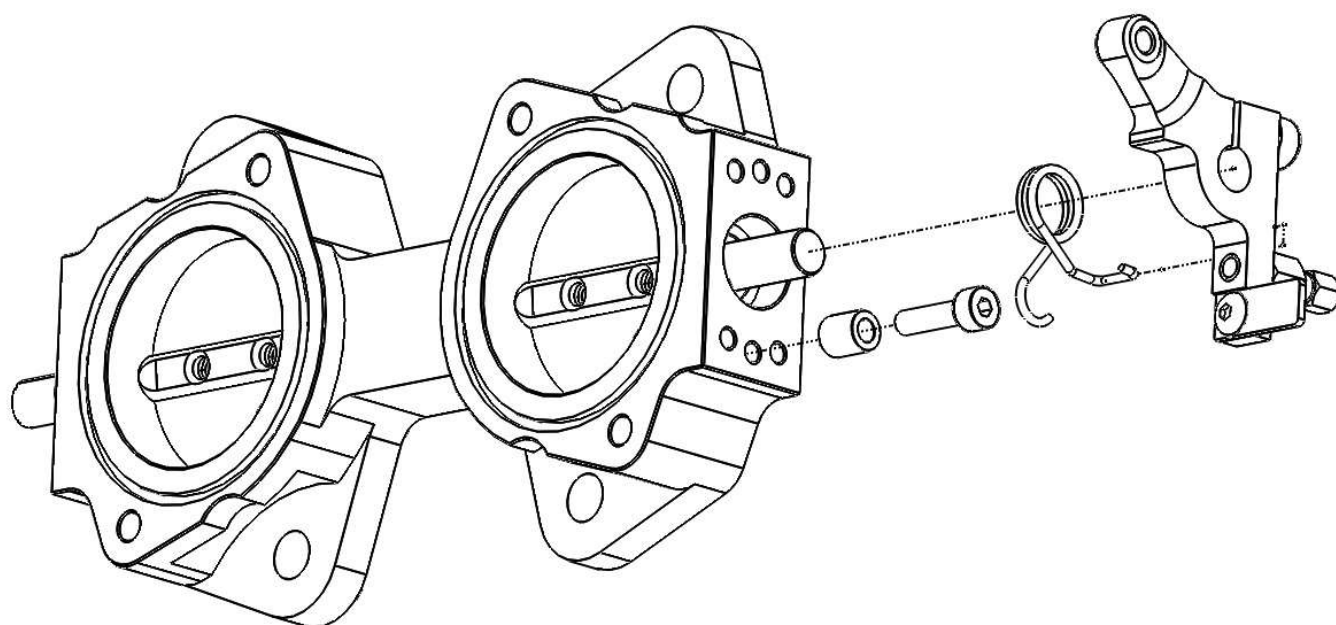
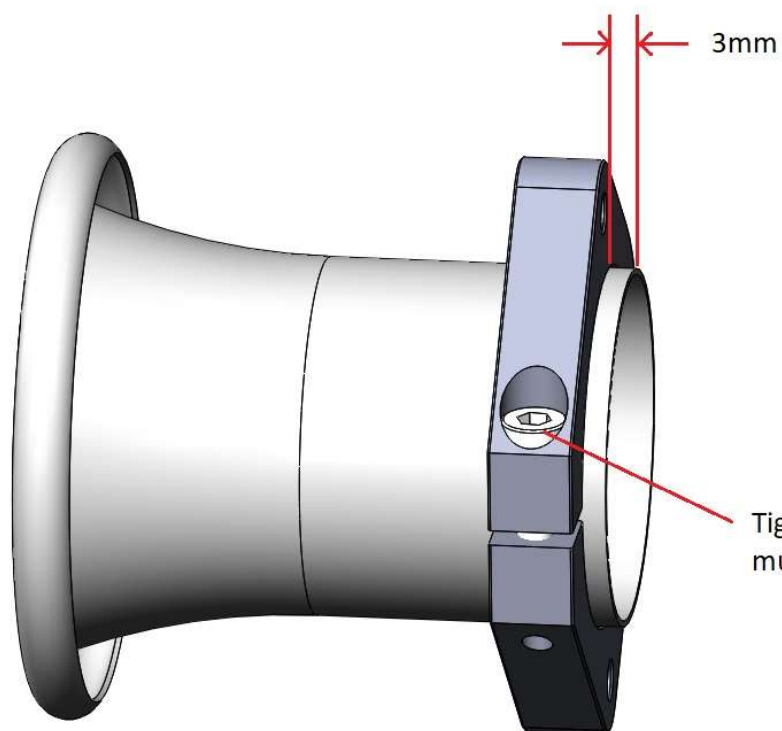


### Brakes:

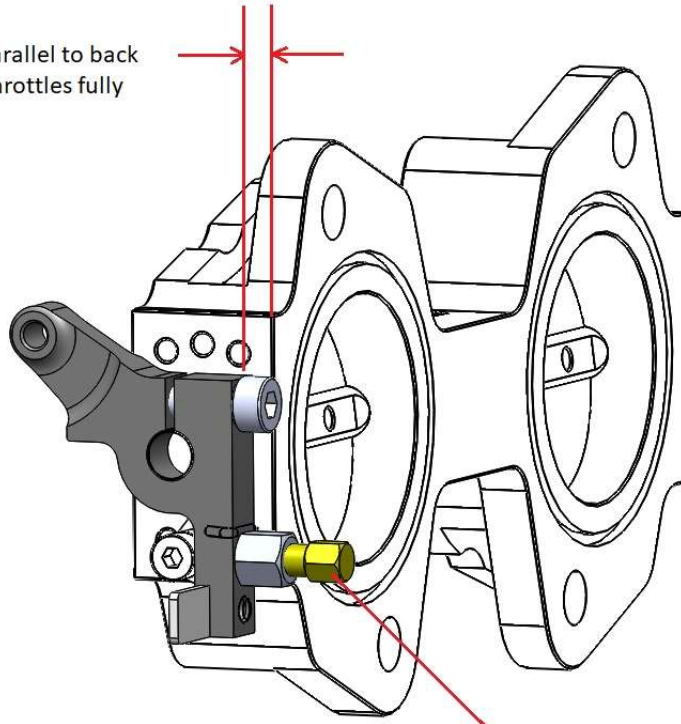
For correct brake booster operation you will need to follow the diagram exactly! Attach the vacuum hose to the T fitting provided on the manifold. The booster will work exactly as OEM running from just 1 cylinder. The vacuum from 1 cylinder is much stronger than the signal from the vacuum accumulator block! It is essential that the small plastic 1-way valve fitted to the factory booster line is maintained.

**DO NOT connect the booster line to the vacuum block!**

Happy motoring ☺



Set lever parallel to back  
face with throttles fully  
closed



Set idle screw so it just touches the  
stop with throttles fully closed

