



BMW M42/44 ITB Kit

E36 – E30

Assembly instructions

NOTE!!

This kit is available in 2 different versions for e30 and e36 vehicles. The e30 version has the manifolds and carbon airbox sitting slightly higher for clearance over the brake booster.

They also have slightly different linkage assembly please pay close attention to the following exploded diagrams.

sales@racehead.com.au

Revesby, NSW, Australia +61 408 608 318

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.

This kit is designed to work with the standard ECU and does work well straight off installation. However lots of details do need special attention. Many tuning companies offer services for tuning the factory DME this is can also optimising the performance slightly moew. Installing a stand-alone ECU configured with Alpha-N will always bring the best results. Do NOT try to use MAP as the only load signal for tuning ITB systems. Most quality ECU brands will have no problem running pure Alpha-N. However some brands may struggle with resolution so a combination of TPS and MAP is needed. We recommend and sell EcuMaster as an affordable quality ECU, we can offer support and Ecumaster 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 cold. This is perfectly normal DO NOT try to adjust them.

To install and set up this kit you will need a weber/ITB synchronizing tool pictured below. You will also need a good understanding of mechanical devices and the appropriate mechanics tools. Parts needed are some 8mm vacuum hose, and pod filter

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

Manifold	2 pcs
42mm ITBs	2 pcs
Trumpet set	4 pcs (trumpet, base and cap screw)
Trumpet spacers	4 pcs
Backing plate	1 pc
50mmx2mm O rings	12 pcs
Linkage brackets	2 pcs
M5 drop link set	1 pc (LH & RH rod ends, bras link)
Coupling adjuster	1 pc
TPS mount and screws	1 pc
Linkage mechanism	1 pc (bracket, shaft, return spring and cable quadrant)
ITB master lever set	1 pc (lever, Idle stop, return spring)
Universal lever	1 pc
M6 x 16 bolts and washers	2 pcs
Fuel rail spacers	2 pcs
M6 x 55 cap screws	2 pcs
M44 ICV plate	1 pc
7 port Vacuum block	1pc
M8 x 25 cap screws	8 pcs
M6 x 20 cap screws (trumpets)	8 pcs
M6 x 16 cap screws (spacers)	8 pcs
M5 x 20 cap screws	4 pcs
8mm x 1/8 bsp hose tail	4 pcs
8mm x 1/4 bsp hose tail	4 pc
12mm x 1/4 bsp hose tail	3 pcs
1/4 BSP m/f/f Tee fitting	1 pc
6mm x 1/4 bsp hose tail	1 pc
3mm x 1/4 bsp hose tasil	1 pc
12mm x 3/8 bsp hose tail	1 pc
16mm x 3/8 bsp hose tail	1 pc
ICV hose patch fitting	2 pcs
Plenum	1 p

Assembly Procedure:

Assemble the throttles as per the following pictures. Adjust the balance adjuster screw so it protrudes about 2mm towards the J spring, Install onto the throttle shafts leaving the balance adjuster only slightly tight. Make sure when you install the master lever the throttle is fully closed and the idle stop screw is just touching the little round stop. Install all the small pipe fittings onto the manifolds before you install them onto the engine. Install the manifolds and fuel rails with injectors first then attach the throttles. Make sure the little tabs on couplings are wedged between firmly between the adjuster screw and the J spring, NOT in the loop part of the J spring! Install the linkage mounting bracket on the front throttle. Loosen off all the couplings and push all the throttles closed with your finger and firmly tighten the adjusters. Next install the linkage and idle circuit parts and hoses. Install the spacers only with arrows pointing towards the engine, no backing plate, trumpets or plenum for the moment.

AIR TEMP SENSOR: For M44 engines the air temperature sensor will need to be removed from the OEM filter box and installed into a hole drilled in the new plenum or backing plate. M42 engines have the sensor in the AFM but if your using a stand-alone ecu a new sensor will need to be installed and connected.

TPS: Current version kits have a fixed TPS adapter position, This must be bolted in the CENTER HOLES of the throttle body. The screws that attach the actual TPS still have some movement. This can be used to slightly adjust the position if needed. Output voltage can be measured between pins 2&3 and should be about 0.5v when the throttles are fully closed.

Now you can start the engine and synchronize the throttles, you might need to block the inlet of the ICV for it to rum and idle. Use the outer throttle cable adjuster to tension the cable until the engine is running at least 1000-1200rpm. Allow the engine to warm up to operating 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.

Plenum: Remove the spacers then build an assembly of the spacers backing plate and trumpets. Make sure the base clamps on the outer 2 trumpets are facing inwards and leave all the screws loose. Bolt the plenum to the backing plate and fully tighten. You can use RTV type sealant or make a compressible gasket between the backing plate and plenum, not essential using a stand-alone ecu but recommended when using the OEM ECU. Install the whole assembly back onto the engine again making sure the screws between the trumpets and spacers are loose. Install all the screws before any of them are tightened. Tighten all the screws starting from the throttles, tighten the spacers onto the trumpets last



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 becomes loose or disconnected. A second main return spring is included on the upper mechanism 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. When installing the lever to the top shaft make sure it is NOT pushed tightly against the bearing on the bracket. 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 over load 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. It is important that the ICV draws metered air AFTER the MAF sensor. For stand-alone ECU the ICV inlet is not important.

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

Block off the air bleed hoses on the injectors, using 2 little pieces of 8mm SOLID bar works well as per the picture, otherwise discard the hoses and inject some silicone sealer directly into the plastic hose tail of each injector also works very effectively!

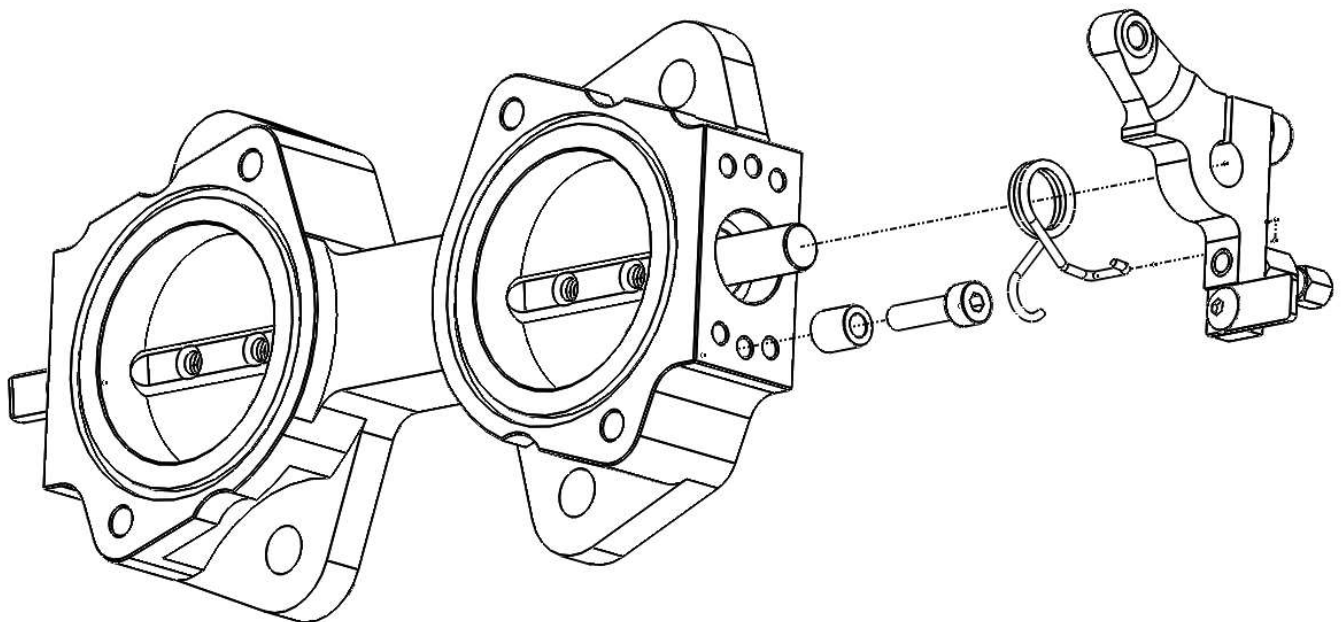
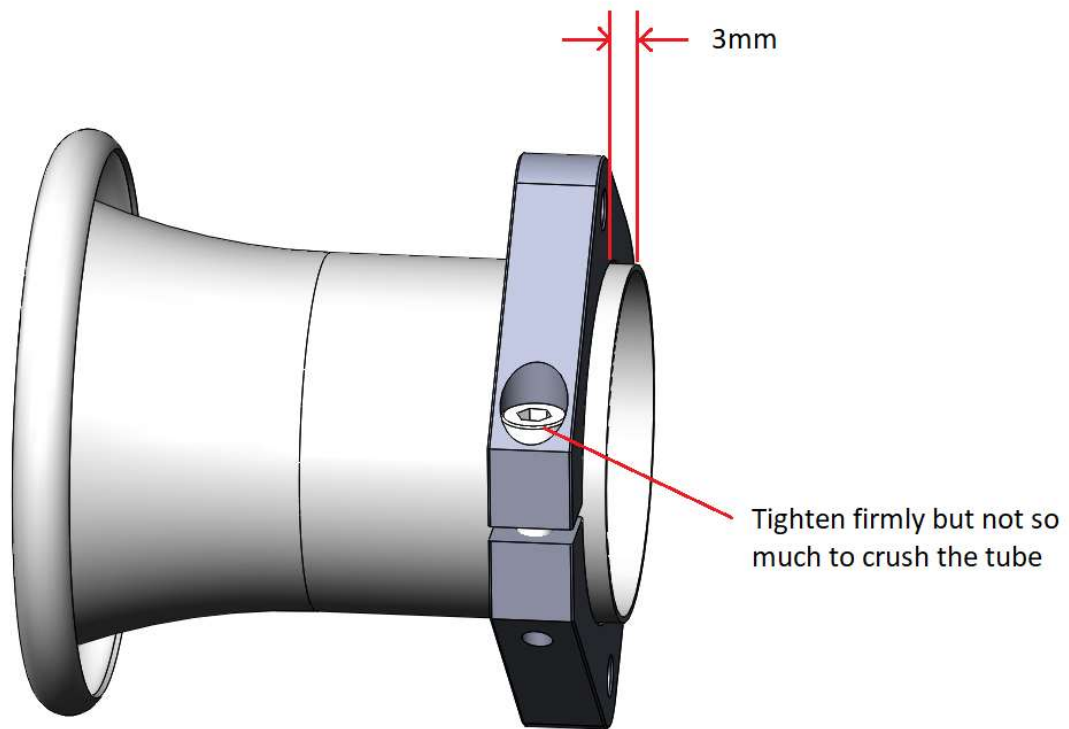


Brakes:

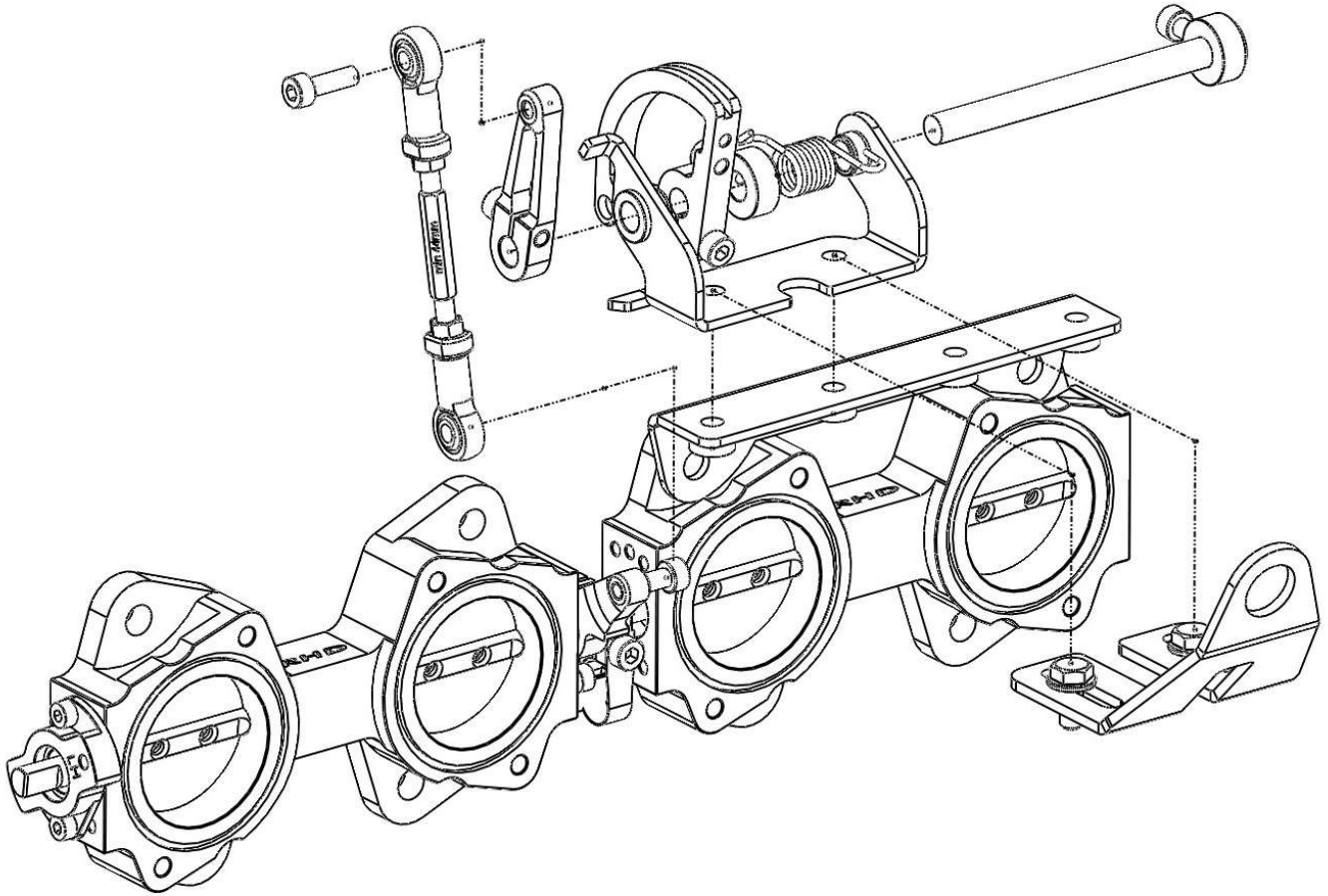
For correct brake booster operation you will need to follow the diagram exactly! Attach the vacuum hose to the T fitting provided on the manifold. The booster will work exactly as OEM running from just 1 cylinder. The vacuum from 1 cylinder is much stronger than the signal from the vacuum accumulator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

DO NOT connect the booster line to the vacuum block!

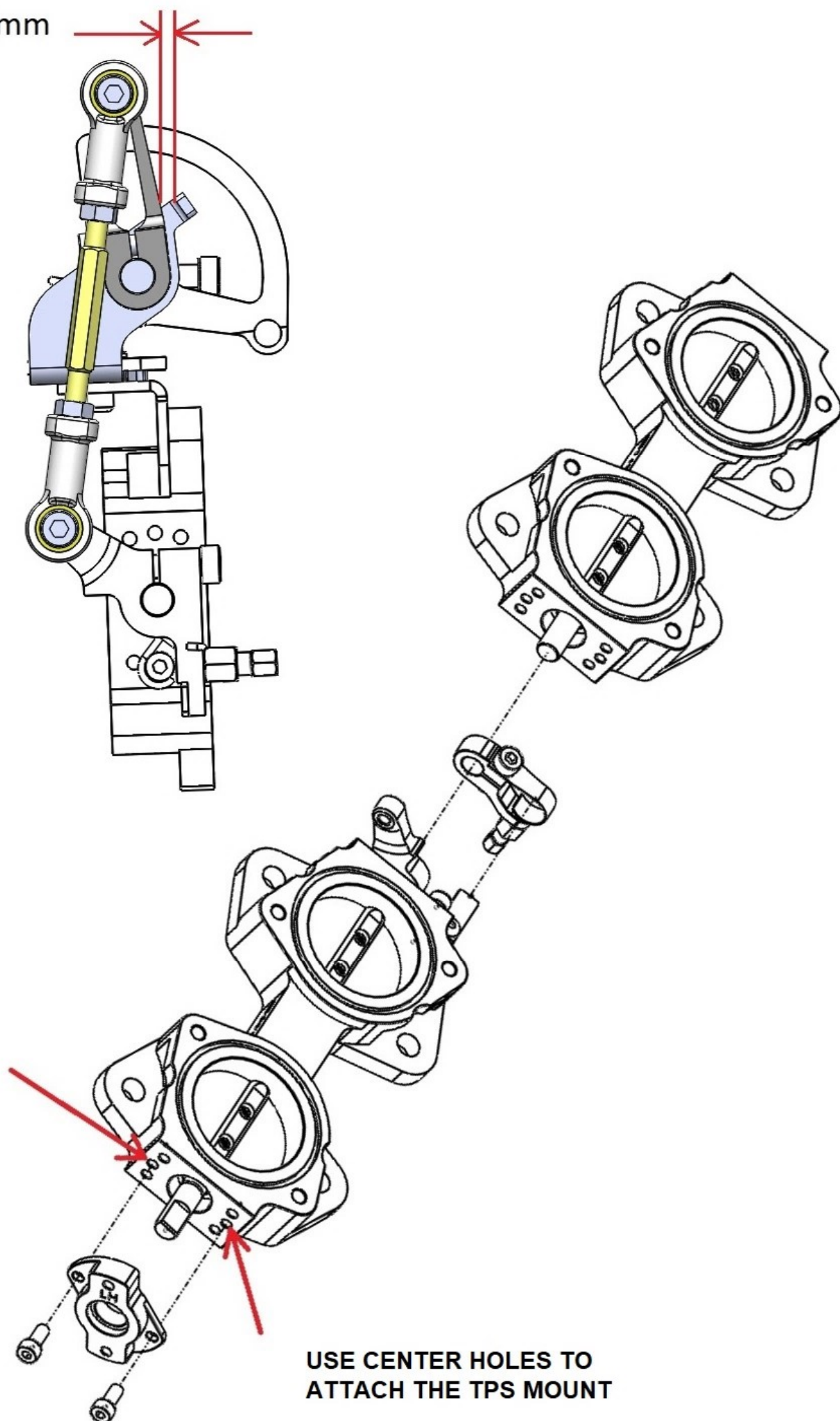
Happy motoring ☺

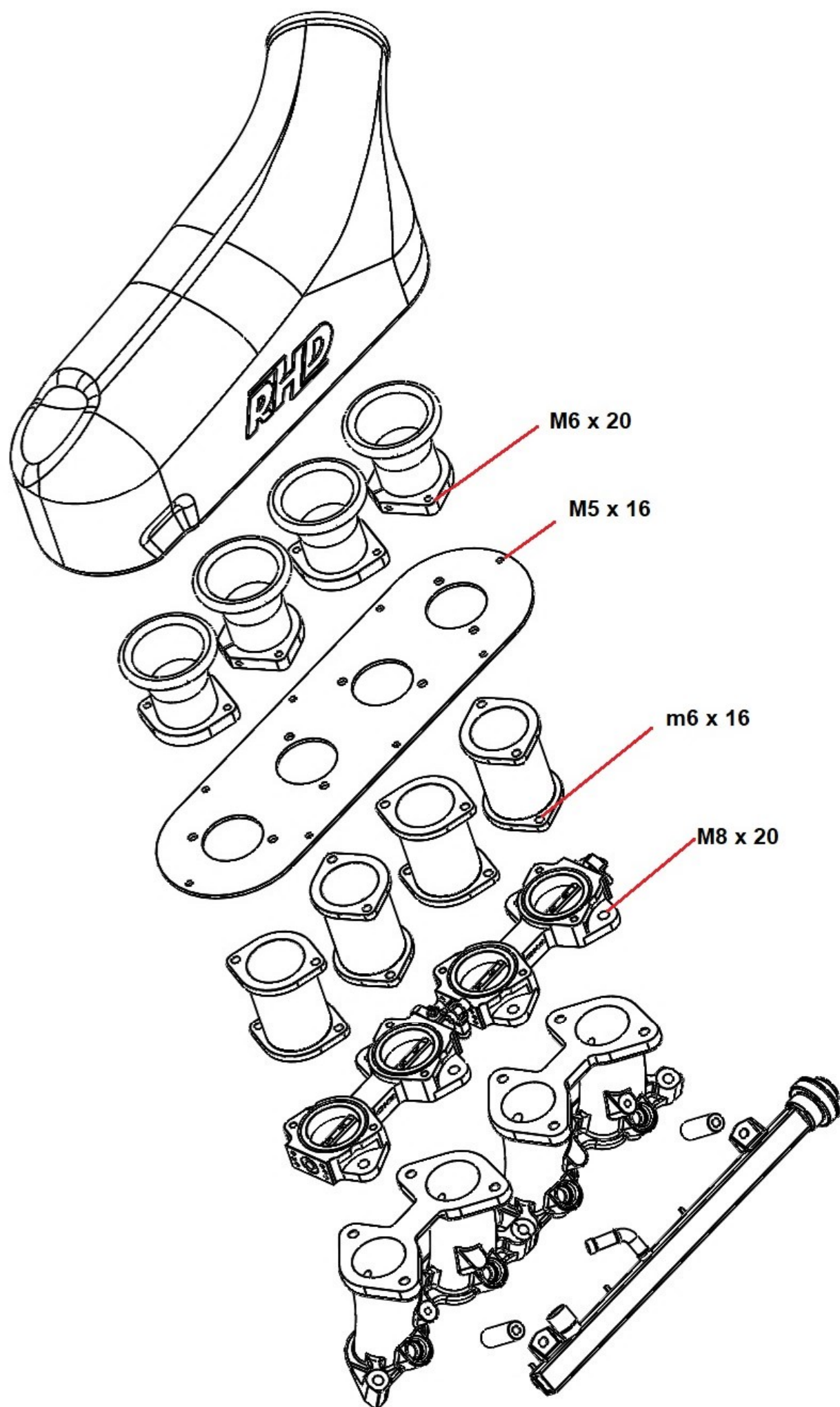


E30 Linkage Assembly



2-3mm





ICV must draw air from
intake pipe or plenum
AFTER the MAF sensor!

