

BM1A102TK01A, BM1A102TK02A and BM1A102TK04A Turbo Upgrade User Manual

As each BMW 745i engine has a bit different performance depending on engine condition and as environmental driving conditions may vary a lot **two boost adjustments** are provided for proper set-up and power range selection:

- 1. Main Adjustment Screw (A1)** on top of the wastegate
This screw determines the maximum allowed boost and "kick" characteristics. In top position (Turn it all the way up so that screw threads fill the cover hole) wastegate valve has full range and turbo kick is smallest. In bottom position the boost can rise to dangerous levels! This adjustment is not changed very often. You can have 1-3 different settings for different purposes. E.g. one for daily drive, one for "racing" and one for ¼ mile.
- 2. Control Valve (A2)** in driving cab usually next to gear shift lever
This valve controls the minimum and maximum boost levels within the max. setting of A1. Both adjustments are interactive and together provide a very stable boost in all driving conditions. BMW's original wastegate set-up was designed for low-boost conditions only so it did not have to work properly in high boost and high rise rates of boost conditions.
- 3. First time set-up**
Turn A1 into top position and A2 fully closed (= min.power setting from A2). Accelerate with half throttle to verify that everything works properly and that the boost does not rise much over one bar (note that half throttle condition may have higher boost than full throttle).
Next accelerate with full throttle and note down the boost level at +4000 rpms. It should be approx. 0.5-0.7 bar.
Next turn A2 fully open (max. power) and repeat full throttle acceleration. Now the boost should be 0.3-0.5 bar higher. If you reached 0.8-0.9 bar boost at +4000 rpms your basic set-up is done! If you got lower boost than 0.8 bar you need to change A1 adjustment until 0.8-0.9 bar is reached. Turn in A1 two rounds and repeat acceleration test. Repeat the procedure if needed.
Important note: We have found out that 0.8-0.9 bar boost is safe value for standard 745 3.4L engine with 98 octane gasoline. However, never exceed knock-level of your engine whatever the boost is! That means that your engine is getting too much air compared to gasoline and "melt down" can happen.
- 4. Advanced set-up**
The maximum boost can be set with A1 to very high levels. We have not tested what those are because no standard 745 engine would stand those power levels! We have run standard (in excellent condition) engines at 1.1 and 1.3 bar boost without problems, but do not recommend it if you do not know your engine's condition and fuel supply capacity. The best thing is to actually measure the fuel/air mixture in different boost levels to ensure proper operating conditions. Useful and safe max. boost levels are dependant on so

many other factors like ambient temperature, humidity, octane, condition of fuel system, extra fuel injectors, exhaust system, etc..

Depending on condition and modifications of your engine and on your willingness to take risks you can find other good set-up points with A1 adjustment. Just gradually turn it towards bottom and see how the performance and nature of the turbo changes.

5. **Liability**

As we have no control over the engines where our turbo upgrade kits are installed we can not take any responsibility for any damages or accidents caused to the engine, car or third party of the use of these products.

Anyway, have fun!

