# Adapting K1100 Throttle Bodies

A popular modification to the K75's big brother, the K100, is to replace the OEM throttle bodies with K1100 throttle bodies. Changing the throttle body assembly improves the performance of the engine because the throat of the K1100 TBs are larger in diameter by 1mm or so but smooth all the way down the throat and not stepped like the K100; more air can enter the system. When it comes to a K100, this change is a direct swap of parts, although there is some fiddling to do with the throttle cable adapter to ensure that the K100 throttle will properly actuate the K1100 throttle cam.

As luck would have it, I found a nice, inexpensive K1100 throttle body assembly on Ebay, which I had every intention of adapting to my K100 at the time I purchased it. However, that never came to be so with this build of the K75, I decided to try to use them on this bike. I researched, read, and asked questions as to how I could move this idea forward but no one had yet given this a try. I was pioneering. Obviously, this is not a direct parts swap as with the K100, given that one cylinder is missing from the K75. It means having to modify the stock K1100 TB assembly to fit the smaller engine.

## Removing One TB

The first step was to decide which one of the four bodies was going to go. TB1 has the end cap, TB3 has the throttle cam and TB4 has the fast idle cam and Throttle Position Switch (TPS). The only eligible candidate was TB2. I unbolted and removed TB1 and TB2 from the K1100 rail, replaced TB1 and bolted it back in place, in the position that was previously occupied by TB2. I then cut off the rail just after TB1 so that it would fit the shorter space in the engine compartment. Luckily, the spacing of the TBs is the same on the K75, the K100 and the K1100. The modified assembly snapped right into place on the intake manifold rubbers. So, it mechanically fit.

## Adapting for the K100 TPS

The next hurttle to overcome was the Throttle Position Switch (TPS). The throttle position sensor on the K1100 is significantly different than the K100 TPS. The K1100 TPS is a potentiometer that outputs a resistance proportional to the degree of rotation of the butterflies. This is read by the K1100's Motronic ECU that adjusts fueling. The TPS on the K100 is a set of two switches -- one that actuates just as the butterflies begin to open and the other that actuates just as the butterflies get to full open. These two positions are supplied to the L-Jetronic ECU.

Along with the functional differences, there are mechanical differences. The K100 TPS will attach to the K1100 but the shaft is too short and of the wrong shape to engage the K100 TPS. Luckily the shape and length of the pivots on the shaft are the same, meaning that the shafts are interchangeable. The solution to the TPS problem is to substitute the butterfly shaft on TB4 with the old one from the K75 throttle body. As you will note from the photo, the K100 shaft is longer than the K1100. This is the extra length necessary to get the K100 TPS to work. What may not be readily apparent from the photo is that the placement of the circlip on each shaft is slightly different. This causes a problem with air leakage from the TPS which can be easily rectified.

**To exchange the shafts:**

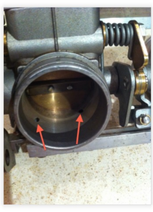
On the K75 TB
I removed the nut and washer holding the actuating cam, removed the two screws holding the butterfly in place, removed the butterfly from the bottom of the TB and pulled out the shaft. There are two rubber washers that seal each end of the shaft and a spacer washer on one end that will also need to be removed and saved.

On the K1100 TB
I removed the nut and washer holding the actuating cam, removed the two screws holding the butterfly in place, removed the butterfly from the bottom of the TB and pulled out the shaft. There is one rubber washers that seals one end of the shaft and a spacer washer on the other end that will also need to be removed and saved.

Because of the position difference where the circlip is placed on the K75 shaft, both spacer washers and an additional 1.5mm thick washer will be required. If these are neglected, the shaft will not seal at the TPS end resulting in measurable air leakage around the shaft that causes upset in the engine. On my TB, I found a 1.5mm thick nylon washer that I used for spacing the shaft (see photo to the right). Pile all three washers against the circlip, insert the K75 shaft into the K1100 TB body, seal the cam side with one of the saved washers (flared side facing outwards) and fasten the fast idle cam onto the shaft. When the shafts are exchanged and the cam replaced, check lateral play in the shaft. It should be minimal, about 0.2mm. It will be necessary to ensure that the butterfly completely seats across the throat of the throttle body. There is significant play in the butterfly and setting its position correctly is critical to making the modification work. When the butterfly is seated properly, tighten the two screws that secure it to the shaft. Check the operation of the throttle body to ensure it is not binding and that the butterfly nearly seals the throat of the TB completely. Holding the TB up to the light will show only a sliver of light shining through.

Re-install the K1100 TB onto the rail and recheck the operation of the assembly. The throttle cam should move fully through its motion without binding and all three butterfly valves should be nearly closed.

I wanted to be sure that all the orifices in the TBs were clean and clear so I used a pipe cleaner and carb cleaner to remove all residue from the vacuum ports and air bypass orifices. These photos show those openings that need attention.



## Fitting the TB to the K75 Engine

Installation of the complete TB assembly was straight forward. They fit on to the rubber intake mounts with no problems. I only found one issue with the installation and it was quickly fixed. The actuating cam interfered with the manifold for TB1 preventing the butterfly valves from opening fully. I bent the idle bump stop in such a way that it avoided the manifold. But, this bend in the actuator caused another interference with the rail so I filed off a corner on the actuator to have it clear the rail.


## Performance

I've had time to evaluate the K1100 throttle bodies' performance. There seems to be a performance increase over the standard K75 TBs. I feel that there is more torque at low RPMs because the bike accelerates well in fifth gear when cruising on the highway even with the higher gearing from the K1100LT final drive. The bike has spirit in the mid-range from 4000 RPM, possibly indicating more horsepower being made available. Without empirical data from a dyno test, all this is speculation.

I'd recommend this conversion if you have a K1100 TB assembly available, either sitting in the spare parts pile or if it can be obtained at a good price, like mine. My conversion cost me a lot of effort because I was learning and experimenting. Maybe others' installations will go smoother now that I've made my experience available.

Posted 4th April 2014 by Anonymous



2 View comments

**Komando Alicante** 09 January, 2018 05:23
thank you very much

For years I loved its design of the K 75 but I see that I fall short, I also change the butterfly ramp for one of k1100, a real discovery.

I want you to know that if one day I can I will have a motorcycle very similar to your K 75

Reply

Replies

**Anonymous** 08 March, 2018 10:01
This is great. I'm in the process of doing this and could only find vague references to replacing the shaft for TB 4 on the 1000 with TB for the K100. this is very helpful!

Glenn

Reply