

What if there is no specific map available for my combination?

To help answer this question, it is helpful to understand the following;

- ... **How we develop maps**
- ... **Why a map for another combination is still effective**
- ... **Are custom maps necessary ?**
- ... **How to choose a map for your bike**
- ... **Air filters, why do some maps say stock and others say stock and K&N ?**
- ... **Altering the map for certain circumstances**

Every map that we design is developed on a bike using the exact parts that are stated in the notes of that map. The bike is put through various tests and the fuel curve is optimized for that combination of parts. Maps are not based on guesswork, computer simulation, or magic. They are based solely on power output and an exact air/fuel ratio.

Is this all to say that if we do not have an exact map for your bike that the Power Commander will not work for you? No. We are very specific about what parts are used in the development of our maps, but that does not mean that the map will only work with those exact parts. Mufflers, air filter kits (Harley models), and full exhaust systems of similar construction can be substituted for the ones in the map notes. While substituting parts may not yield 100% optimization, performance will still be noticeably improved.

Well then, when is a custom map required? Custom maps can help achieve closer to 100% optimization on any bike, but is that really necessary? Generally no. A bike may be 60-70% optimized in standard form. With the Power Commander and an available map from our database the bike may be 90-95% optimized. This constitutes a huge gain in performance. Is it crucial to have the last 5-10% of optimization? It depends on what your goal is. If every last bit of power is necessary then it can be. If what you want is a bike that runs considerably better than standard without any additional adjustment then it is not. The point at which a custom map is really a necessity is when the engine and or exhaust are heavily modified. When a bike has special cams, ported heads, and or a "one off" exhaust system a custom map is the only way to fuel curve match the engine requirements.

If you need a map for a setup that we do not have a specific map for then there are a few steps that you need to take to determine the correct one. These things should be checked in the following order.

Stage of ECM (Harley Davison models only)

When looking at the map database first choose stock, Stage 1, or Stage 2 ECM. This has a large affect on the map requirement and should be looked at first.

Cams

Most sport bikes will have standard cams. If the cams have been changed then a custom map will more than likely be necessary.

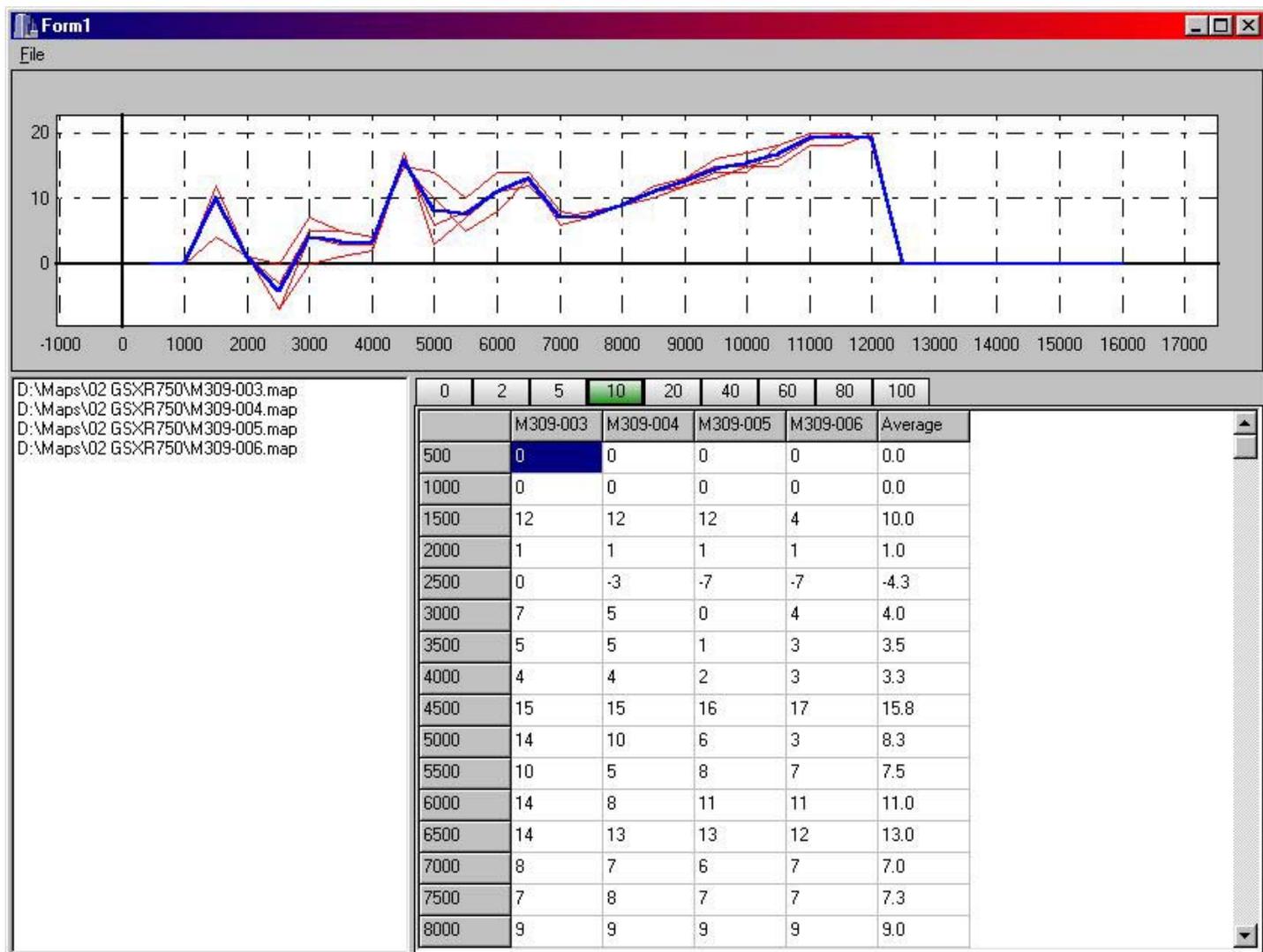
On Harley Davidson models there are a large variety of cams to choose from. We offer maps for the most common ones, but it is impossible for us to offer maps for them all. If you have the cam specifications you can compare them with the cams we have listed. If the duration is close then the map should work acceptably well.

Exhaust Systems.

For all models of bikes, there is a vast selection of exhaust systems to choose from. Many of them are quite similar and you should consider the following;

Diameter of the core and whether or not the core is “straight through”.

Most “race only” sport bike mufflers use a 2”-2 ¼” core. If your muffler has a similar core size to one listed, the map will work quite well.



This is an example of four different slip-on maps for a GSXR750. The red lines show the different fuel curves for each slip-on and the blue line is the average of all four. As you can see, the fuel curves are all quite similar. While there are some differences, any one of these maps would work well with any of the mufflers tested.

Slip-On Exhausts

Slip-on mufflers have three main points that need to be considered. Try to match the version you have with one that is available based on the following;

- 1) Length of the muffler
- 2) Diameter of the baffle
- 3) Whether or not the muffler has a baffle

Complete Exhaust Systems.

Much like the slip-on mufflers, there are a wide variety of systems to choose from. They can be classified into a few basic categories.

Harley

Drag Pipes.

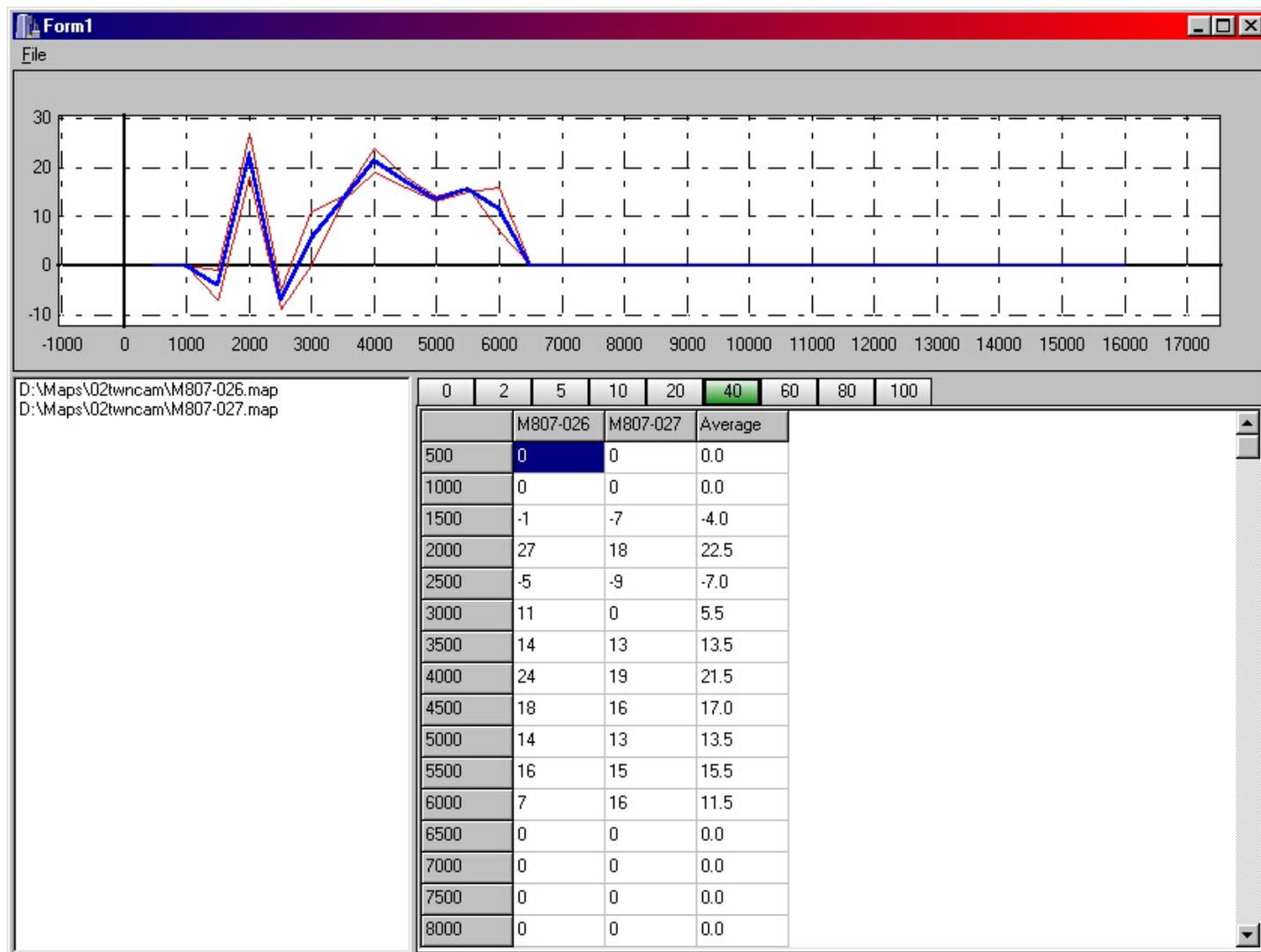
Most of the drag pipes made for HD models have similar internal diameters (the outside diameter, due to heat shields, etc, can make them look quite different). This leaves the main difference to be length and whether they are baffled. When choosing a map for a set of drag pipes that a specific map is not available for, look at these two items and select a map for a set with dimensions that closely match. Drag pipes in general are not the best choice for performance. Even with perfect mapping some compromises in power output can be expected.

Slip-on mufflers with "True Dual Headers".

All of the "true dual" systems we have tested offered performance and mapping characteristics. If you have brand X mufflers with Brand Y "true duals" a map for brand X mufflers and brand Z "true duals" will work just fine.

2 :1 full systems.

The best power producing systems tend to be 2 :1 full pipes. Different 2 :1 systems were tested and comparable fuel curves were found.



This example shows the fuel curves from two popular 2 : 1 systems. You can see from the red lines that the fuel curves follow the same pattern. One has slightly less fuel added in some areas than the others, but not enough to significantly reduce performance if used with the other pipe.

Sportbike

4 :1 Systems.

All of the “race only” full exhaust share similar characteristics. Choose any map from the “full system” list if yours is not listed. If there is a particular area in the power curve you think needs attention you can edit the map file (discussed later) or try a different map. No damage can come from trying maps and it only takes a few seconds to load a new one. This does not include systems that have “street or “quiet” core mufflers. These types will generally require a map that is close to the settings for a stock exhaust due to the increased restriction caused by this type of core.

2 : 2 (Twins).

The same rules apply here as the 4 :1 systems

Half Systems.

These are similar to slip-on or bolt-on mufflers. The same maps for slip-ons will work with the half systems.

Air Filters

When a new bike is released, aftermarket air filters are not always available. We therefore test with the stock air filter only. These maps will have notes stating, “stock air filter”. If after we test the aftermarket filter (K&N, etc.) we find that it does not affect the fuel curve, the notes will state “Stock or K&N air filter”.

This means that all of the previous maps that had been tested with a stock filter can be used with an aftermarket one as well.

Map Requests

We receive hundreds of map requests every month. It is not possible to develop every combination but we do our best to cover as many combinations as we can. In order to accomplish this, we purchase new motorcycles and develop maps with exhaust systems generously donated to us by the exhaust manufacturer.

There are many reasons why a specific combination may not be available but if you join the mailing list for your model of bike here <http://www.powercommander.com/suppllist.shtml> , you will be notified when the map becomes available.

Adjustments

If you are running a map that you are happy with, but feel it needs some small adjustment, it is fairly straight forward to make the changes to the map.

Power Commander Control Center

File Edit View Options Port Utilities Help

Fuel Table Ignition Table

	0	2	5	10	20	40	60	80	100
500	0	0	0	0	0	0	0	0	0
1000	0	0	0	0	0	0	0	0	0
1500	0	11	15	9	7	10	9	10	14
2000	0	0	12	13	3	10	10	8	13
2500	0	0	15	24	18	9	16	14	17
3000	0	0	14	27	28	13	19	19	19
3500	0	0	0	14	24	16	8	14	15
4000	0	0	0	14	25	12	7	12	14
4500	0	0	0	15	23	15	14	12	15
5000	0	0	0	14	24	16	15	13	14
5500	0	0	0	12	23	16	15	13	16
6000	0	0	0	0	0	0	0	0	0
6500	0	0	0	0	0	0	0	0	0
6800	0	0	0	0	0	0	0	0	0



Upload All

Upload Map

Load File

Save File

Get All

Get Map

Compare

Notes

Not Modified M805-002.map Port set to: COM1

The above example shows several cells in the map selected. To do this, first click on the starting cell (in this case 5% throttle and 2,000 rpm). Then press and hold the “shift key” on the keyboard. At the same time use the “arrow keys” on the keyboard to select multiple cells. The selected cells in the above example are in the typical cruise area of most bikes (some bikes may cruise at a higher rpm, more cells can be selected). You can now use the “page up” or “page down” keys (on the keyboard) to adjust all of the selected cells evenly. Pressing the “page down” key four times would lean out the selected area 4%. You may wish to do this to improve fuel economy on long trips.

Power Commander Control Center

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Fuel Table Ignition Table

	0	2	5	10	20	40	60	80	100
500	0	0	0	0	0	0	0	0	0
1000	0	0	0	0	0	0	0	0	0
1500	0	11	15	9	7	10	9	10	14
2000	0	0	12	13	3	10	10	8	13
2500	0	0	15	24	18	9	16	14	17
3000	0	0	14	27	28	13	19	19	19
3500	0	0	0	14	24	16	8	14	15
4000	0	0	0	14	25	12	7	12	14
4500	0	0	0	15	23	15	14	12	15
5000	0	0	0	14	24	16	15	13	14
5500	0	0	0	12	23	16	15	13	16
6000	0	0	0	0	0	0	0	0	0
6500	0	0	0	0	0	0	0	0	0
6800	0	0	0	0	0	0	0	0	0



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Notes

Not Modified M805-002.map Port set to: COM1

This example shows only the 100% throttle column selected. If, for instance, you wanted to see if the bike runs better at wide open throttle with more fuel added (richer) you could press the “page up” button three to four times (with the cells above selected). This would richen the mixture by 3 to 4%.

You can also make changes to individual cells if there is a specific area (rpm/throttle position combination) that you feel needs attention. Things like a stumble or surge can be quickly addressed.