



THUNDERMAX
EFI made simple.

BASE MAPS: HOW TO SORT & SELECT

SmartLink IV Tuning Manual Excerpt
Pages 36-42
SOFTWARE Version 2008.1.14 For
ThunderMax High Resolution ECM
For 2001-2009 Delphi®-Based Air Cooled Motorcycles
(Except 2008-09 Touring Models)
Manual V.20090528

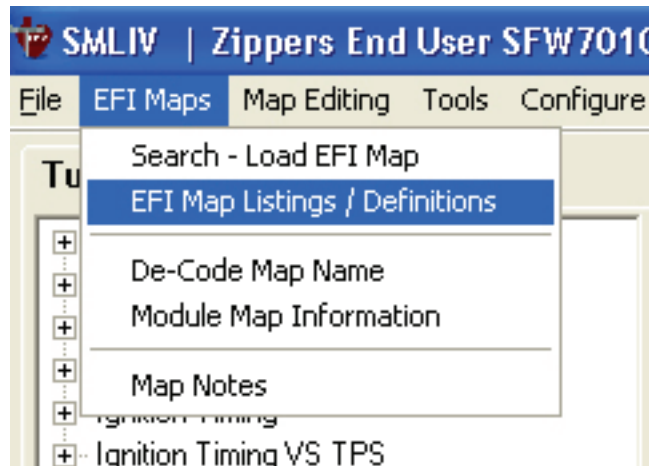
The ThunderMax EFI controller is not legal for use or installation on motor vehicles operated on public highways in the State of California or other States where similar emission control laws may apply.

The user shall determine suitability of the product for his or her use. The user shall assume all risk and liability in violation of regulations and any incurred financial obligations due to vehicle inspections or emissions tests.

Email Technical Questions to:
ProductSupport@ZippersPerformance.com
www.Thunder-Max.com

SELECTING A BASE MAP FILE FROM THE SMARTLINK IV DATABASE

The SmartLink EFI Map Database will help you choose the closest Base Map for your specific installation. To find the SmartLink EFI Map Database, select **EFI Maps > EFI Map Listings / Definitions**, as shown below.



The following window should appear, with the title “Base Map Definitions”.

Item...	Manufacturer	EngineType	Family	Throttle	Exhaust	
359	HarleyDavidson	110ci	TwinCam A8B	50mm Screamin' Eagle (4.89 Inj)	2:1 D+D Fat Cat	Mc
377	HarleyDavidson	110ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	True Dual Rinehart Full System	
378	HarleyDavidson	110ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	2:1 D+D Fat Cat	Mc
379	HarleyDavidson	110ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FL Head Pipe	Sto
380	HarleyDavidson	110ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FL Head Pipe	KW
382	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	2:1 D+D Fat Cat	Mc
383	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FL Head Pipe	KW
384	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	True Dual Rinehart Full System	
385	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FL Head Pipe	Sto
386	HarleyDavidson	95ci	TwinCam A8B	Stock HD 01-05 (Stock 4.22 Inj)	True Dual Rinehart Full System	
391	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	2:1 D+D Fat Cat	Mc
392	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FL Head Pipe	KW
393	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	True Dual Rinehart Full System	
394	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FL Head Pipe	Sto
395	HarleyDavidson	95ci	TwinCam A8B	Stock HD 01-05 (Stock 4.22 Inj)	True Dual Rinehart Full System	
396	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	True Dual Rinehart Full System	
397	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	2:1 D+D Fat Cat	Mc
398	HarleyDavidson	103ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	True Dual Rinehart Full System	
399	HarleyDavidson	103ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FL Head Pipe	V&H I
401	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FXST Head Pipe	KW
402	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FXST Head Pipe	Sto
403	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FXD Head Pipe	KW
404	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FXD Head Pipe	Sto
411	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FXD Head Pipe	KW
412	HarleyDavidson	96ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Stock HD FL Head Pipe	D+
413	HarleyDavidson	110ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	Staq Duals V&H Big Shot w/PC	M
414	HarleyDavidson	103ci	TwinCam A8B	Stock HD TC 06-07 all, 08 FX (25° Inj)	True Dual Rinehart Full System	
415	HarleyDavidson	1200cc	EVO XL	Stock HD XL 45mm	Stock HD XL Head Pipe	KW
416	HarleyDavidson	883cc	EVO XL	Stock HD XL 45mm	Stock HD XL Head Pipe	KW
419	HarleyDavidson	88ci	TwinCam A8B	Stock HD 01-05 (Stock 4.22 Inj)	Stock HD FL Head Pipe	HD SE
420	HarleyDavidson	88ci	TwinCam A8B	Stock HD 06 8° Inj	Stock HD FXD Head Pipe	Sto

To select the closest Base Map for your engine combination, please read the following section on Key Elements. This will help you quickly narrow down the vast selection of available Base Maps and find the right one for your starting point.

Base Map “Key Elements”:

The reason for selecting a Base Map by “Key Elements” is to find the closest Base Map available for your combination, by the most critical components. The most critical elements for selecting a Base Map are:

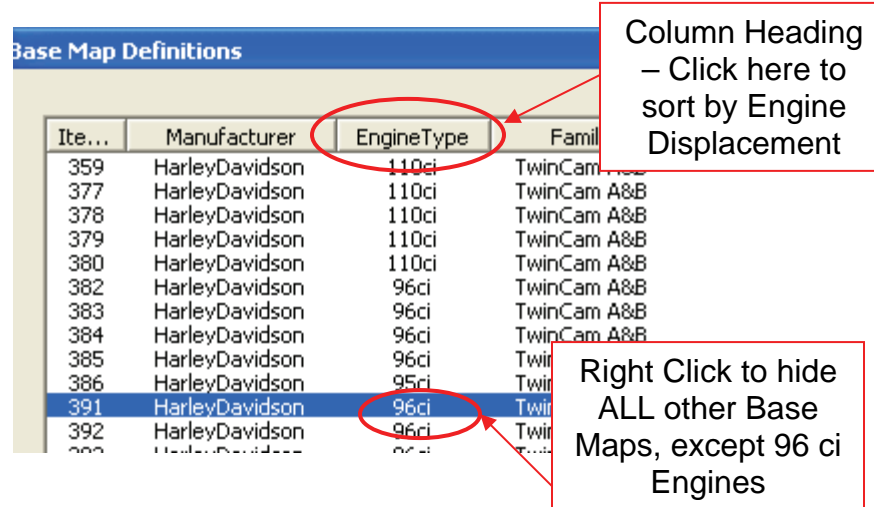
- a) **Engine Displacement** - Bore & Stroke. A correct match to the engine’s stroke is far more important than an exact match of engine displacement. For example, a 2007 96ci engine would respond better to a 103ci map (4.375” stroke) than a 2003 95ci map (modified factory 88ci engine – (4.000” stroke).
- b) **Throttle Body / Injector Size & Style** - Note that certain applications in 2006 used an 8 degree spray pattern, and others used a 25 degree spray pattern. The AutoTune system can easily account for various throttle bodies and injectors. Use the closest match to your system, if an exact match is not available.
- c) **Exhaust System Design** – If an exact match does not appear in the Base Map library, select the Base Map with the closest style of exhaust system. Even if your brand is not an option, choosing the closest style will yield excellent results. Group your exhaust system in one of the following three categories:
 - i. **Factory Head Pipe with Crossover** – Dual exhaust systems with a cross over pipe that connects the front and rear exhaust pipes. Typically kept with slip on mufflers.
 - ii. **Dual Exhaust** – 100% separate exhaust pipes, short or long.
 - iii. **2 into 1 Collector** – Both head pipes converge into one collector.

The AutoTune system allows you to choose a Base Map that isn’t a perfect match and still have excellent results. The closer that the Base Map is to your combination, the faster the system will achieve the desired AFR Targets. This simply means less time to a great tune. Even if your combination isn’t listed, select the closest match and let the AutoTune start creating your custom Base Map while you ride. To use the Accelerated Auto Map feature, see page 57 for the full procedure on how to create your custom base map.

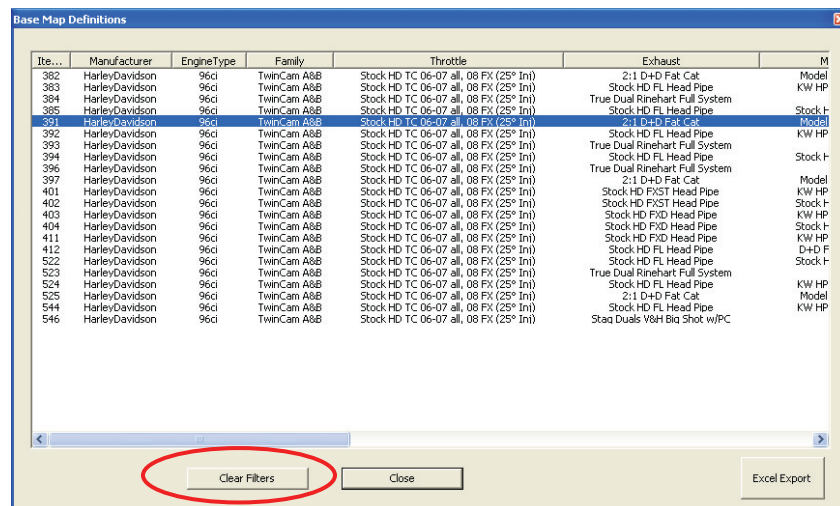
Base Map File Browsing / Selection:

Now that you have the Base Map Definition window open, you may begin narrowing down the list of maps for your application. To sort the map files by a particular key element, click on the column heading.

Select “Engine Type”, the Base Map Definitions will be sorted by the engine displacement, which is the first Key Element you need to match to your combination. All of the column headings can be used for sorting purposes.

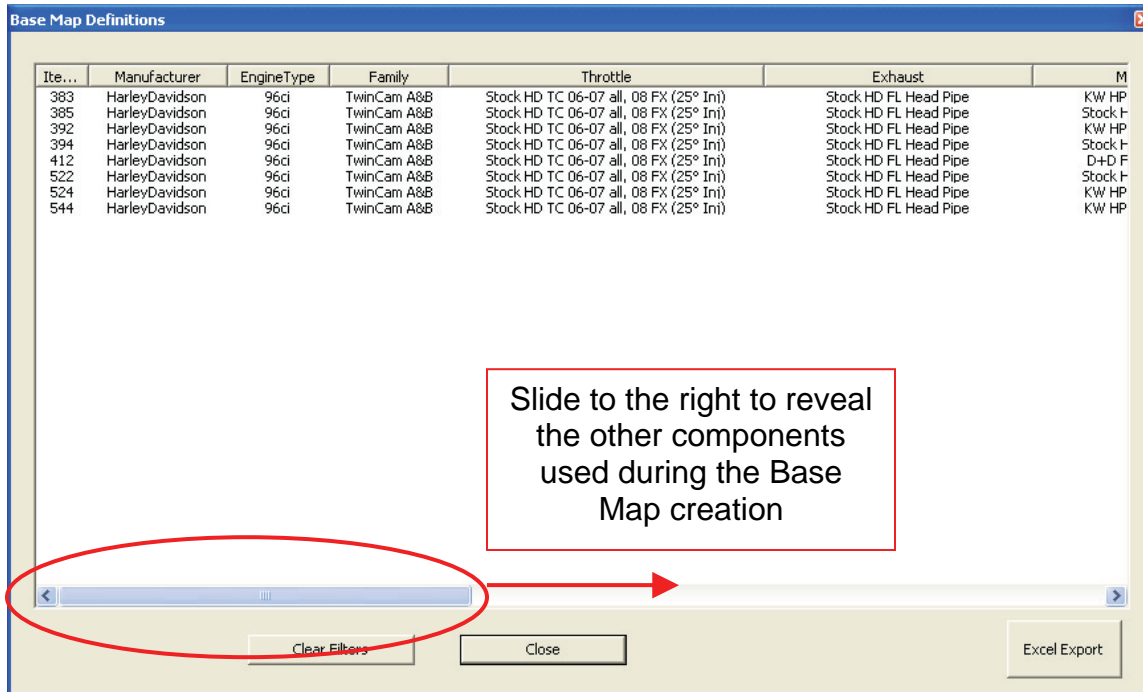


To filter the SmartLink IV EFI Maps Database, RIGHT click on the engine displacement that matches your engine, as described in the Key Elements section. Right clicking will hide all other options for that particular category. If you right click on “96 ci”, all of the other options are temporarily hidden, as shown in the following picture.



Notice that the “Clear Filters” button is now selectable. If you want to go back to the complete library listing, select the “Clear Filters” button and you will start over with all Base Map Files displayed.

Now that an engine displacement has been selected, and all the other maps are hidden, move to the second Key Element, Throttle Body / Injectors. For a 96 ci engine, all of the available Base Map choices were created with factory installed throttle bodies and 25⁰ injectors. Since there aren't any additional options, move on to the third Key Element, which is the exhaust system. If you have a factory head pipe with slip-on mufflers, right click on "Stock HD FL Head pipe" to hide all other exhaust options, as shown below.



All 3 Key Elements have now been satisfied, the engine displacement, throttle body / injectors, and the exhaust system. As the picture above shows, there are still 8 choices for a Base Map for your engine combination. The ThunderMax with AutoTune system has more than enough resolution to use any of these Base Maps to correctly tune your engine. Remember, Base Maps are starting points, the AutoTune system correct for your specific engine and riding conditions.

Continue selecting options until you have the library narrowed down to the fewest number of maps as possible. Several options may still remain; always select the Base Map with the latest build date. Double left click to select this Base Map.

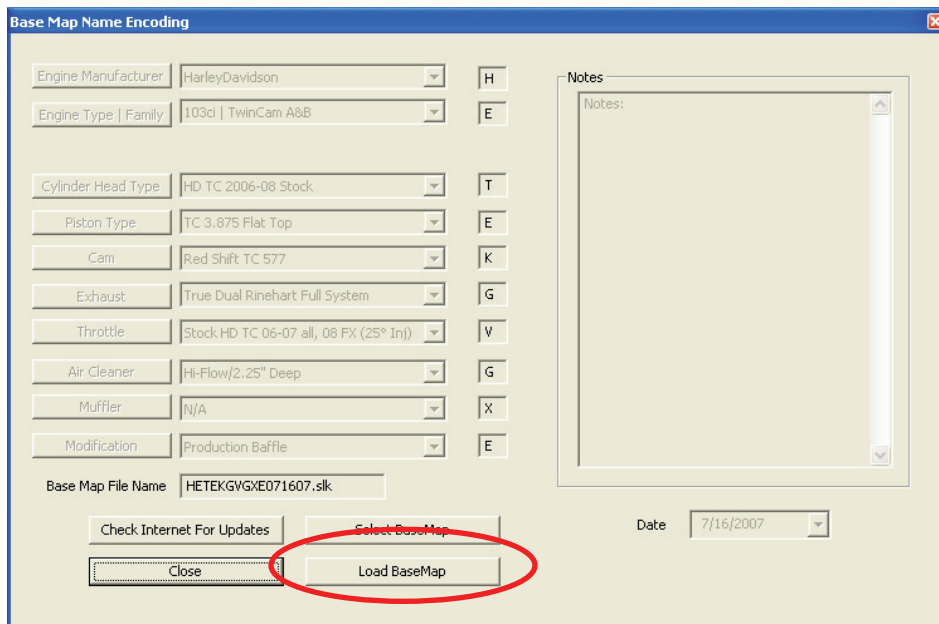
Cam	CylinderHead	Piston	Modifications	Date(Day-Month-Year)
Stock	HD TC 2006-08 Stock	Stock Flat Top	None	04-04-2007
Stock	HD TC 2006-08 Stock	Stock Flat Top	None	05-01-2007
Stock	HD TC 2006-08 Stock	Stock Flat Top	None	04-01-2008



If you're still unsure of which Base Map to select, please email the specifications of your Key Elements to ProductSupport@ZippersPerformance.com. Please title the email "**Base Map Selection**" for a faster response.

Loading the Base Map File:

Now that you've selected the appropriate Base Map file for your engine combination, you need to load this selected Base Map into SmartLink IV. Once the Base Map you've chosen has been double Left clicked, the following window will appear, titled "Base Map Name Encoding."



Loading the map into SmartLink IV does not Load the map onto the ECM.

See Page 45 for an explanation of writing the map to the ECM.

Select the "Load Base Map" button on the "Base Map Name Encoding" window, as shown above. Once selected, SmartLink will load this Base Map and return to the Air / Fuel Ratio vs. TPS page.

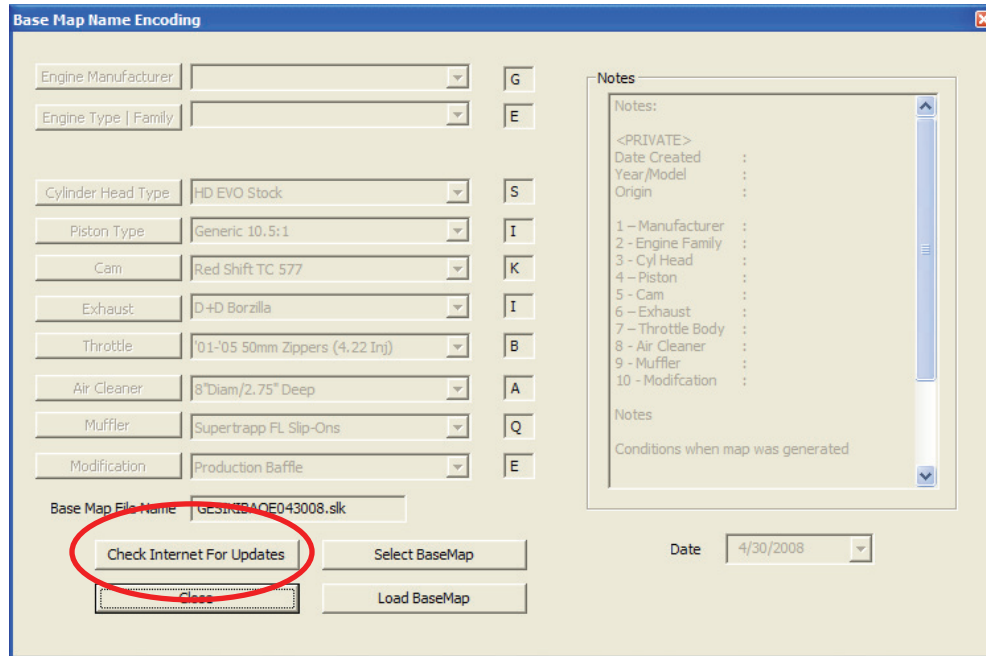
Now that the map is loaded into the SmartLink IV software; you must write the map to your ThunderMax ECM as described on page 46. If you are installing a new Base Map in an already used ThunderMax ECM, please remember to clear all of the offsets from the module's previous Base Map, and double check the Basic Settings (page 79).



Proceed forward with the Tuning Manual, **remembering that a new base map file will require the ECM to be initialized** (page 13), the Basic Settings need to be checked (page 79), and all offsets must be cleared from the previous map.

Base Map Definitions Updates:

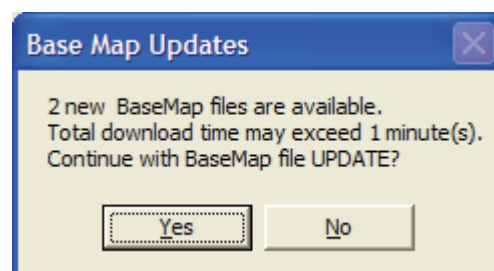
To ensure that you have the complete, and up-to-date, Base Map Library, select the **“Check Internet for Updates”** button on the “Base Map Name Encoding” window, as shown below.



Base Map Updates:

SmartLink IV now downloads all of the new base map files when you update the Base Map library. Previously only the Base Map library list was updated, so if you selected a map from an updated library list, SmartLink needed to download the map from the internet before you could proceed. Now the Base Map files are all downloaded during the update, which simply means that the newest Base Maps are always stored on your computer.

The following window will appear if any new maps exist in the Internet database, but do NOT exist on your system:



You will be provided an ESTIMATE of the download time required to perform this task.

SmartLink IV

It is simply good practice to update the definition file when searching for a new Base Map file. Not only are new maps constantly being created, but the older Base Maps are updated occasionally as well. Once updated, you may proceed with selecting an appropriate Base Map for the current engine combination you are working with. When the Base Map Library is up to date, the following window will appear:



If you are satisfied with the operation of your current Base Map, chances are a new Base Map will not make a significant difference to the operation of the motorcycle. Updated maps could contain spark curve or fuel management changes, or even fuel economy strategies.



If you are unsure how to select a map after reading this section, contact a Zipper's representative for assistance. This step is critical in the optimization of the power, economy, and overall drive-ability of your motorcycle. Zipper's Performance Products is committed to customer satisfaction, so please do not hesitate to ask for assistance.