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## **Turbocharging an F8B**

**Preface:** A guide to assist in the process of turbocharging a MightyBoy

**Estimated completion time:** A bloody long time!

**Specialist tools required:** Lots

### **The rundown on what you need and how it fits.**

Based on my own experience combined with input from Colin's installation, this should give you the basic steps, parts list, and a rundown on how to turbo your F8B engine using parts from a CB60/61 Daihatsu Charade. Please note that this article is in no way a definitive start to finish guide, but will give you a better understanding of what needs to be performed in order to do the conversion.

#### **You will require the following parts from a Charade:**

- Carburettor
- Fuel regulator
- Turbo
- Air Surge tank (also known as carby hat)
- Fuel regulator
- Oil lines

#### **In addition you will need the following:**

- A custom F8B turbo exhaust manifold and dump pipe
- An electric fuel pump (15PSI or greater)
- Oil filter remote locator assembly.

#### **Optional:**

- Blow off valve
- Boost gauge
- Turbo timer



### **Before you start:**

First thing to do is work out a few requirements. First of all, is your engine in good enough condition to fit the turbo? Do a compression check to test. Chances are you'll probably need to at least rebuild it with new rings, but if you've already done that then that's one less thing to worry about.

Second thing to work out how much boost you want to run. Colin has proven that this type of setup is capable of running close to 20PSI, but sadly that isn't an ideal setup for reliability. The standard Charade setup is set to operate at between 5-8PSI, and that should run without any real problems on an F8B with standard compression, however any more boost pressure would require a lower compression ratio and replacement of the fuel regulator with an aftermarket rising rate model.

For the purposes of this article I will stick to the standard CB61 Charade boost level of 6-7PSI.

### **The process:**

Without going into excessive details on say, how to lower compression, the following is what you need to know.

With the exhaust manifold, make sure that it is fabricated in such a way as to position the turbo clear of the radiator, radiator support panel, and the alternator. It is a tight fit, so be precise. Be sure to allow enough room for the exhaust flange/dump pipe as well. If you cannot get enough clearance in any given direction, a smaller (but thicker) radiator can be fitted to give more space.

In order to provide an oil feed line and give enough clearance for the turbo, fitting an oil filter remote locating kit is almost a necessity. By using a t-piece adaptor on the filter return line, your turbo will be provided with cooler, cleaner oil which will hopefully extend its life.

The oil return line from the turbo will require a connection to the sump. Make sure that the pipe is NOT installed below the oil level, and that it does not interfere with the crankshaft. It is recommended to install the return line as close to the top of the sump as possible, near the baffle plate.

With the actual turbo fitment out of the way, attention should be paid to acquiring and installing an electric fuel pump. This pump should supply a fuel pressure roughly 25% more than that of the boost level, this will ensure the correct operation of the carburettor. However care must be taken to ensure that the pump doesn't overpressurise the carburettor. 15PSI of fuel pressure will be adequate, so there is no need for a pump that supplies 40PSI or more, as it will simply push fuel out of every gasket and seal in the carby.

On the same note, it is recommended that the fuel lines (return line especially) are upgraded to adequately handle the increased fuel flow provided by a larger pump.

The carby itself will (thankfully) bolt straight on to the existing F8B manifold, with some minor dremel work an option for making the inlet face match the throat size of the carby. A spacer (sandwich) plate is also suggested to give a little more plenum space and ensure the carby linkages clear the top of the manifold.

Once the carburettor installation has been completed, the distributor will need to be modified to avoid over-advancing and detonation, which will destroy the engine. This particular process is more or less trial by error, requiring the replacement of springs and welding of mechanisms to flatten the advance curve fairly heavily in accordance with how much boost you intend on running. A rule of thumb is to weld the shaft of the distributor to make it solid, and engineer a device to retard the timing when the turbo begins to produce positive pressure.

With the installation and configuration of the above completed, you can then fit the (air) surge tank and connect up the fuel lines and boost gauge/BOV if required.



There you have it, a general rundown on what you need to get your MightyBoy boosted - hybrid Charade style. I have no doubt this article will be updated further in the future, however if you have any queries then direct them to the forum at <http://www.tamon.org/forum>

The following are some examples of Charade turbo installations on MightyBoys:

