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Complete engine teardown to bare shortblock how-to with pictures

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07-23-2009, 12:25 AM

#1

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Posts: 1,384

Complete engine teardown to bare shortblock how-to with pictures

Here is a writeup to go with my engine removal how-to elsewhere. After the engine is pulled out of the car in its complete form, you'll usually be either rebuilding the existing engine block, or using another engine block that is either used or rebuilt. So you need to get all your accessories off your block. There are many ways of doing this, but this method is the most efficient and probably the fastest. Knowing exactly in what order to do things and where each bolt and plug is helps a lot.

This also assists customers of mine who wish to send in their engine block for rebuild. Although I do offer a "longblock" service whereby customers can send their complete engine (as shown below), the general industry standard for non-mazda rebuild shops is for the customer to supply or exchange a bare shortblock, which is what you will end up with at the end of this writeup.

When it is engine rebuild time for you guys, remember which builder took time to photo document, transcribe, and post this procedure for free on your forum for your assistance. 😊

First we have the engine hanging here on the hoist exactly as I pull it out of the car.



Now, I will obviously be using an engine stand, although it is NOT a requirement...it just makes things easier and less messy. A few things have to be removed before the engine stand head can be mounted.

Remove the front oil cooler line.

Remove the 12mm bolt holding the engine ground bracket to the bottom of the intermediate iron on the driver side.

Remove the retaining clip and unplug the oil level sensor in the drivers side of the oil pan. This wire is clipped onto the aforementioned bracket, so separate this clip from the bracket.

Remove the 3 10mm bolts holding down the coil brackets to the front cover. Unplug the 4 coils and the plug wires. Remove the 12mm bolt holding the alternator wire on the alternator, remove the clip holding that wire to the front cover, and remove the whole harness with coils etc.



At this point the engine can be mounted on the engine stand.



Unbolt knock sensor from rear rotor housing. Remove spark plugs. Use a 24mm socket to remove the oil pressure sending unit.



Remove rear heater core hose from pipe on rear iron.



Remove air control valve...disconnect vacuum hose, remove bolt on top bracket and 2 nuts/studs on exhaust manifold. Disconnect wiring harness clip. On some cars the two nuts/studs on the exhaust manifold will be rusty, or you may want to und off the nuts...in this case it is fine to leave the ACV bolted onto the manifold and remove them as a pair.



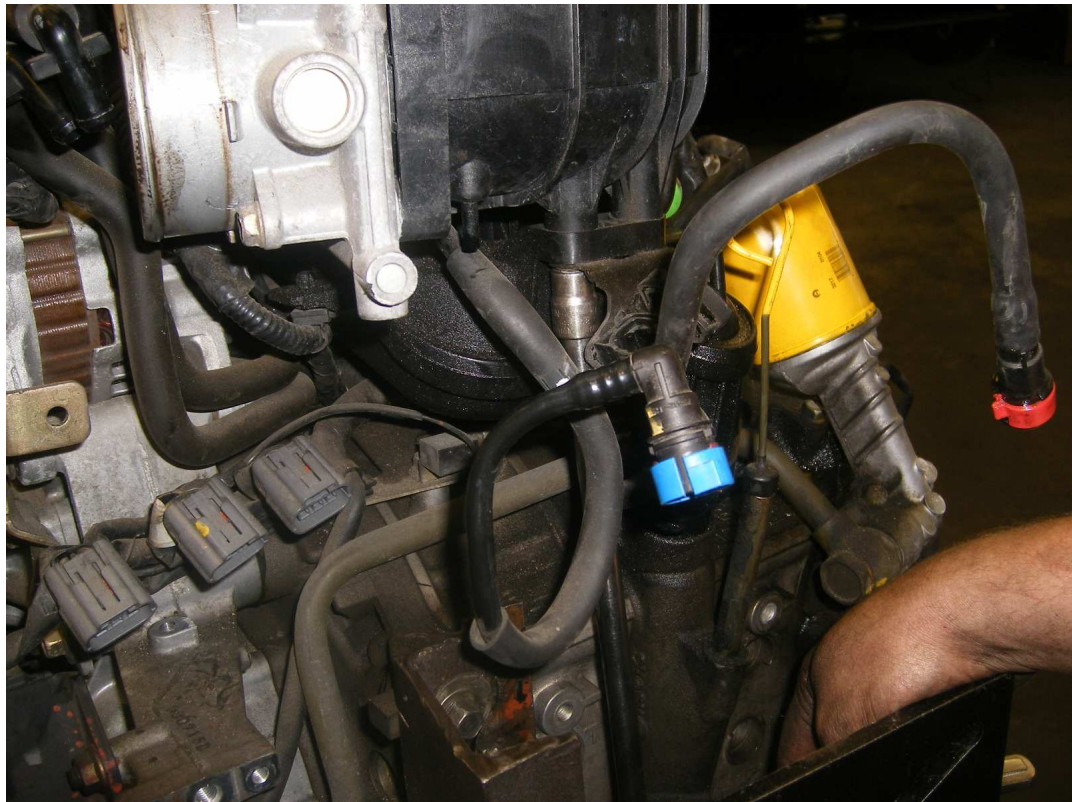
Remove exhaust manifold and gasket. DO not worry if the studs come out with the nuts, this is common and you can reinstall them together too.



Remove both fuel lines from the retaining clips under the intake manifold on the drivers side. Simply pry the clips apart with a small screwdriver.



Use a long extension and socket to remove the 2 10mm bolts facing down from the retaining clip under the intake manifold.



Remove upper intake manifold. Disconnect vacuum hose from the rear drivers side. 5 bolts on passenger side top, plug in vacuum solenoid on top front behind the oil filler neck. 1 coolant hose on top of the throttlebody and 1 coolant hose on the bottom of the throttlebody. Unplug the electrical connector to the throttlebody. Lift upper intake/throttlebody combo off carefully.



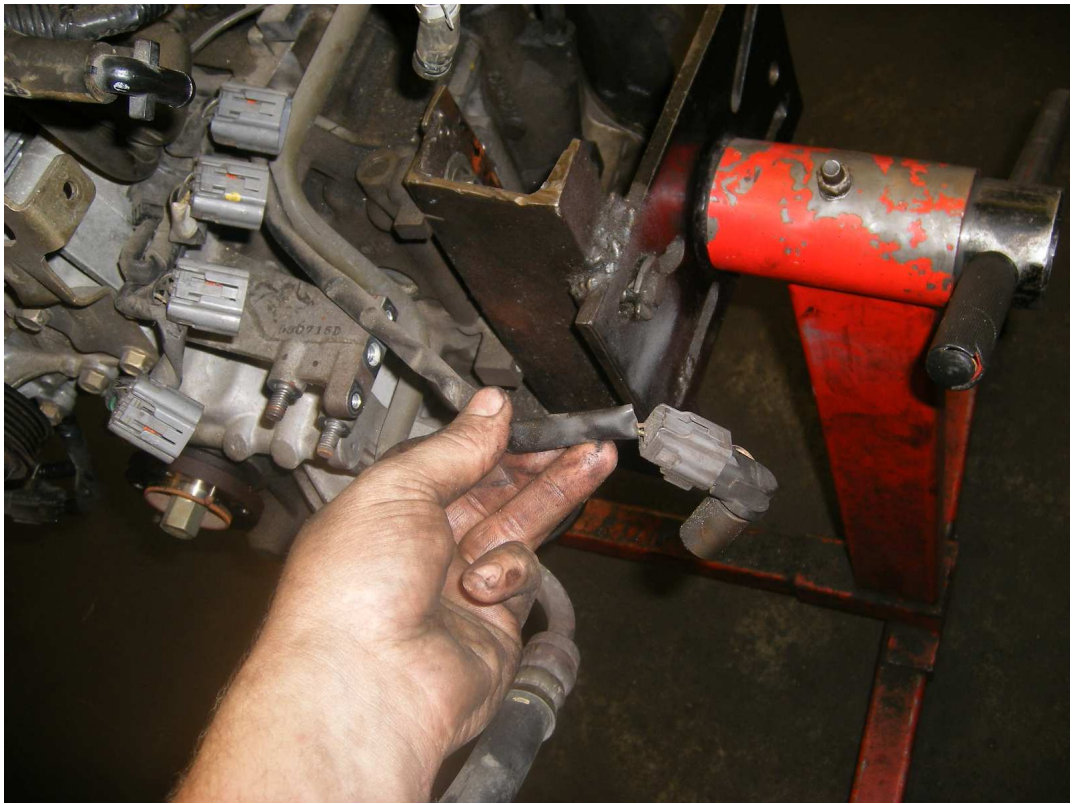
remove oil filler neck. Remove 3 solenoid plugs from the back, 2 vacuum solenoids from port actuabrs, harness clip, and 2 nuts at base of the neck.



Remove extension manifold...



Remove a/c belt tensioner from front cover. Unbolt crank angle sensor and remove clips holding harness to front cover. Lay aside on top of the engine harness.



Unplug alternator plug.



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Last edited by RotaryResurrection; 03-20-2014 at 09:19 PM