

Removing the Engine/Transmission Assembly on a Chang Jiang Overhead Valve (M1S)

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This guide is intended for the novice, who for one reason or another, may need to remove the engine or transmission on their Chang. Anyone can do this. If you don't have any experience at all, you can still do it and will probably have to one of these days because you are the only one willing to work on your Chang Jiang in America. At the very least, you will eventually need to change the clutch and/or throw-out bearings. Hopefully, by the time you need to do this, you will have read the owner's manual and performed some of the routine maintenance and will know your way around the bike.

Finding the source of a major oil leak between the engine and transmission motivated this documented instance. It tends to be a common reason for removing the engine or transmission on Changs. From reading Bart Sander's excellent article, "The M1M rebuilding project", in the CJU toolbox, I knew the transmission could be removed separately (at least it can be installed after installing the engine) but it looks like Bart had the distributor off when he did it so the engine could slide forward farther. M1 bikes don't have this problem since the distributor is under the front cover. So, for the following reasons, I decided to pull them out as a unit: a) the distributor sticking out of the side of the OHV looked to me like it would limit the forward movement of the engine enough to prevent the transmission from decoupling while still on the bike, without first removing the final drive and drive shaft and I didn't want to remove the distributor [don't really know if this is true; someone please let me know], b) I didn't know if it was the engine or transmission or if both were leaking, and c) I would rather work on my stuff with lots of room around it; up high if possible.

There are probably a hundred ways to do it. This way works for me. I credit Bart Sanders, Dan Crossman, Richard Cook, Miin Leong, Ray Costa, Gerald Gardebled and others for having posted their insights into removing or installing Chang engines.

General

Since this is intended for beginners, I'll offer up some tips that have helped me out in the past.

- Cruise the CJU toolbox for good tips on how to do a lot of this stuff.
- Whenever possible, put the nut, bolt or screw that you take off back on the stud or in the hole it came out of so you don't lose them. Otherwise, stick them in a Ziplock bag with a label. It doesn't feel good to have left over parts. Have the bags, tape and marker ready. Keep notes too.
- Use metric tools but if SAE fit's better on a nut or screw then use it. You don't need many tools for a Chang Jiang but it's best to use good quality tools. It'll save you some hardware that might be hard to find where you live.
- Don't smoke when fooling with gasoline.

- Don't pound the threaded end of a bolt with a hammer to get it out of a tight hole. If you have to tap it, screw a nut over the end and gently tap with a plastic hammer or with a piece of wood against the nut. If that doesn't work then you might have to heat the part that it's stuck in (not recommended for beginners).
- Use blue Loctite on threads to keep nuts or screws from rattling off when you put them back on. Use red Loctite if blue isn't enough to do the job.
- Torque wrenches are good to have. If you don't know how much to torque a bolt then look on the web, where they have general torque specifications for a given bolt size. The Owner's Manual has some important torque specs and Fred Balanay lists some in his manual on cjpartsdepot.com.
- The same general idea described here can be used to remove the engine/transmission assembly for M1 and M1M Chang Jiangs. You should be able to figure out the differences but I'll try to mention some of them on the major steps if I can remember. I'll be doing my flathead next so I'll take notes.
- I'm not responsible for anything you mess up. Sorry if I forgot anything.

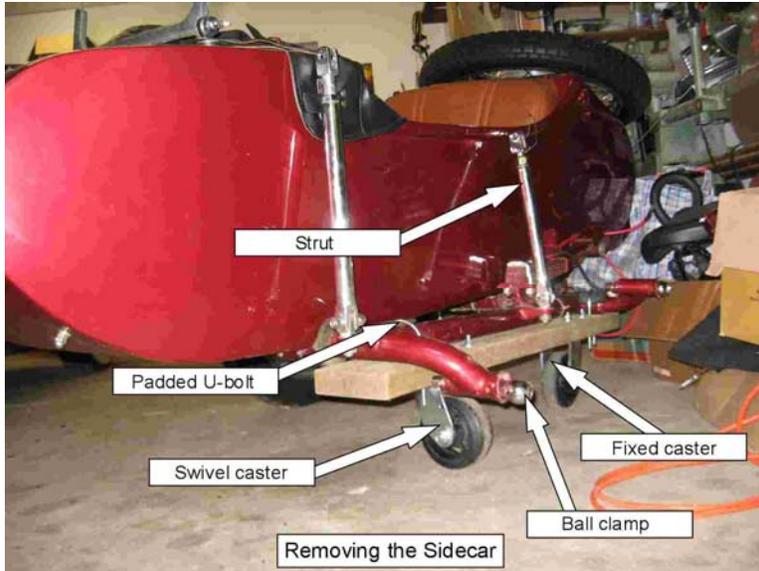
Disconnect the Wire from the (-) Battery Terminal

If your battery is not under the seat or on the right side of the bike, then it's probably in the trunk of the sidecar. Try not to touch the (+) terminal with your wrench when disconnecting the wire from the (-) terminal. It will arc if you do.

Remove the Sidecar if Installed

If you're still nimble enough, this step isn't entirely necessary but removing the engine is at least 100 times easier (for me, anyway) with the sidecar off. Refer to Richard Cook's great articles on installing a sidecar and making a sidecar roller in the CJU Toolbox. It's worth the effort.

- Disconnect any wires between the sidecar and motorcycle. If you don't already have a connector with all the wire between the bike and sidecar, this might be the time to cut the wires and install one.
- Get the bike up on a stand(s) or wood blocks so it doesn't tip over when you disconnect the sidecar. You can try to get it up on the center stand but good luck. I can do it on my other Chang but not on this one. Have to jack it up to lower the center stand.
- Remove the top two bolts of the sidecar struts going up to the bike frame. It helps to rock the bike back and forth if they're hard to remove. Don't do anything to change the length of the struts or the sidecar will go out of alignment.
- Loosen the ball clamps on the lower sidecar connections at the bike frame by removing the cotter pins and screwing the nuts out.
- Pull the sidecar away but keep a hand on the bike to make sure it's not going to tip over. If you have installed a board with casters or Richard's sidecar roller under the sidecar near the mounts, this part is easy. If you haven't, then good luck scooting it around.



My cheap-o sidecar dolly

Remove the Center Stand Spring

This one's even bigger than the brake pedal return spring. Wear your eye protection. It goes between the rear transmission mount and the center stand on my bike.



Remove the Exhaust System and Front Foot Pegs

Richard Cook's article on "resealing pushrod seals and base gaskets" in the CJU Toolbox has a great description of how to remove the exhaust system that you should check out. In it, he gives good advice on what to put on the nut threads to keep them from getting stuck the next time you take them out and what to try if they are frozen on there. Mine come out very easily. Notice that the right front foot peg is holding the brake pedal in position. If you like that position, then mark the frame and foot peg with alignment marks.

- Remove the large finned nuts holding the exhaust headers to the cylinder head. My bike came with a tool that worked OK. If you don't have one, buy the BMW tool that Richard suggests or try a strap wrench. If it's stuck and you try to use channel locks or tapping with a screwdriver and hammer, then you'll probably break it. It's cheap cast aluminum, after all. The M1 and M1M don't use these header nuts. For them, the exhaust headers are just pushed in.
- The headers and the front foot pegs are both secured to the rear transmission mount with nuts. It's a long rod, threaded on both ends and goes all the way through the base of the transmission. You need to get one of the nuts off to remove the headers and foot pegs. Getting one off is easy if you hold the other one with a wrench on the other side. Either side. Doesn't matter. Now, pull the rod all the way out from the side with the nut still on it. The transmission won't fall out. It's resting on the frame. Two spacers will probably fall from between the frame and the transmission. One is thinner than the other. The thin one will go back on the right side and the thick one on the left.
- There should be another nut behind the rear springs that supports the muffler if you have mufflers. Take it off and separate the muffler from the header. It should just slip out. Throw the mufflers away. Sounds better without them (just kidding; unless you want to re-jet and re-tune the carburetors).
- Jiggle and twist the header while pulling toward the front of the bike till the header comes out of the cylinder head.



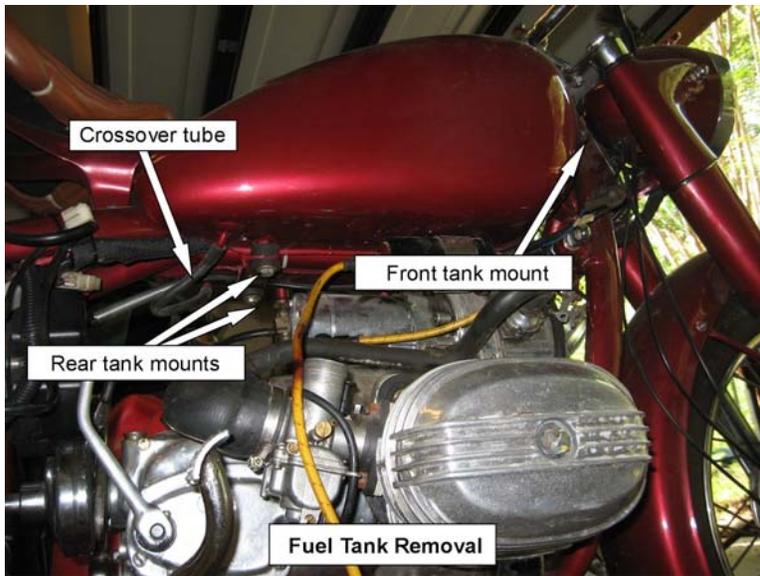
Remove the Air Cleaner

It's just one screw on each side. No need to take them all the way out.



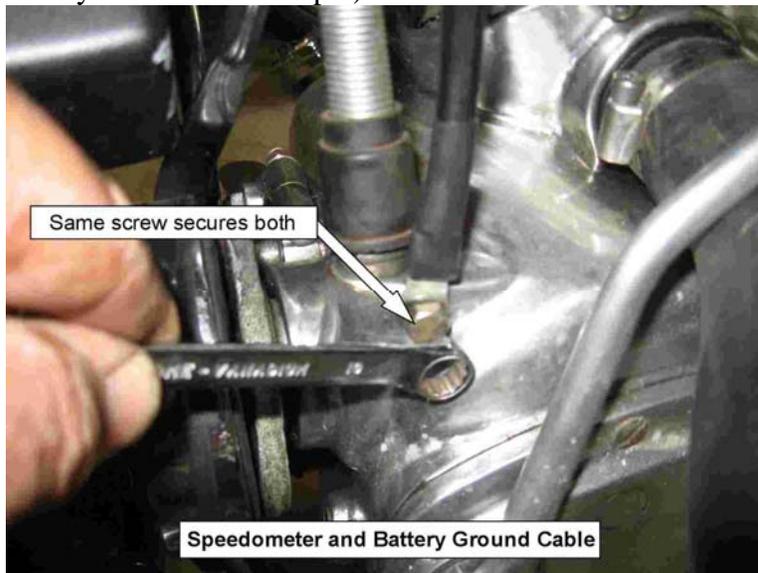
Remove the Gas Tank

- Make sure the petcock(s) is off.
- Disconnect the fuel lines from the carburetors.
- If your bike has 2 petcocks installed they you can go to the step where you disconnect the tank from the frame and just take it off but I don't recommend that you remove it with the gas in there. It's up to you.
- Drain the gas by putting the ends of the fuel lines in an empty, approved gasoline container and turn the petcock to the "Reserve" setting. Don't leave it unattended till the tank is empty. This might take a while so you can secure the lines with wire and go on to some of the next steps while it's draining. If your bike is equipped with two petcocks, you'll have to do this on both sides of the tank.
- When the tank is empty, turn the petcock(s) to the "Off" position.
- Remove the two bolts holding the tank at its lower rear bracket. Sometimes the bolts have holes drilled through the heads with a wire running through the holes to keep them from backing out. If so, remove the wire first. Note where the rubber cushions are located: one above and one below the bracket for each bolt.
- Remove the two front bolts securing the tank to the steering head.
- Disconnect the crossover tube between the two halves of the tank if your bike is equipped with only one petcock. It's located under the tank near the driver's seat. Put out your cigarette (or any other source of spark or flame) and put a rag under it because a little bit of gas will pour out of the tube. If you have two petcocks, there normally isn't a crossover tube.
- Lift the tank off of the bike and lay it on a piece of cardboard then reconnect the crossover tube to keep it sealed.



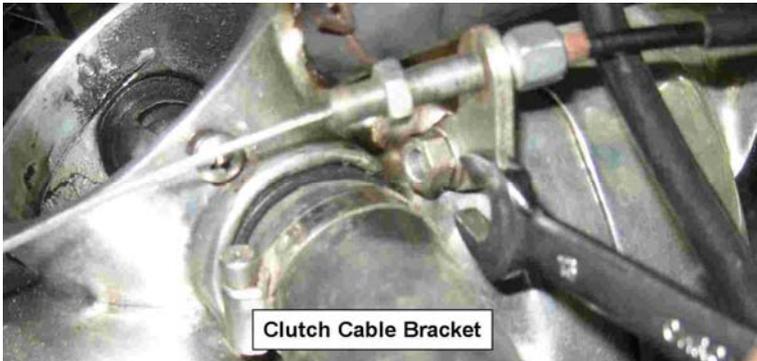
Disconnect Speedometer and Ground Cables

The bolt that connects the (-) ground cable from the battery to the right side of the transmission is the same one that keeps the speedometer cable. Remove this bolt and pull the cable out of the transmission case (and remove the ground cable if you haven't already removed it in step 1).



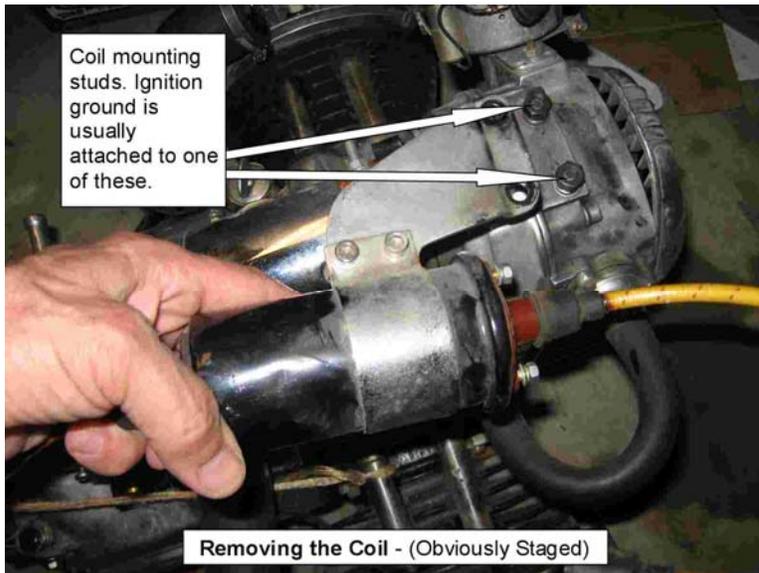
Remove the Clutch Cable

- Remove the nut from the bracket holding the clutch cable to the transmission case and slip the ball end of the cable out of the clutch lever.
- Tie the cable with bracket to the front fender strut to get it out of the way.
- Tie the clutch lever to the engine so that it is held toward the front of the bike to keep it from flopping around.



Remove the Coil

- Label the little wires (+ and -) that go to the coil and remove them.
- Label the spark plug wires (L and R).
- The wire that is attached to the coil mounting bracket is the ground wire going to the ignition and lighting circuits. Label it and remove the two nuts holding the coil bracket to the top of the engine case.
- Remove the coil along with the spark plug wires.



Label and Remove the Starter Cable

Tie it to the frame to get it out of the way.

Remove the Carburetor with Throttle Cables

- Remove the rubber hoses from the air intake to the carburetors.
- For the stock carburetors, remove the 2 nuts on each carburetor that connects them to the cylinder heads (or side of the cylinder for M1 and M1M bikes). If you have Mikuni type carburetors then there's a rubber adapter between the head and

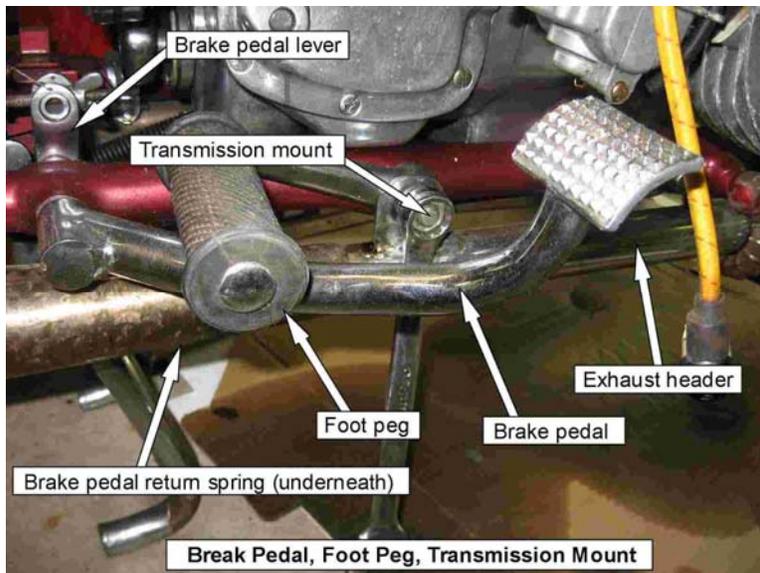
carburetor that uses a hose clamp to secure the carb. In that case, simply loosen the hose clamps.

- Tie them off to the front fender strut to get them out of the way.
- Stuff clean rags into the intake holes left by the carburetors to keep junk out of there. If you're outside, you'll need to tie the carbs up in a watertight bag.

Note: I left the carbs on the engine this time because one of the slides was stuck. I removed the throttle slides and cables. So don't be surprised if you see them on the engine in the pictures.

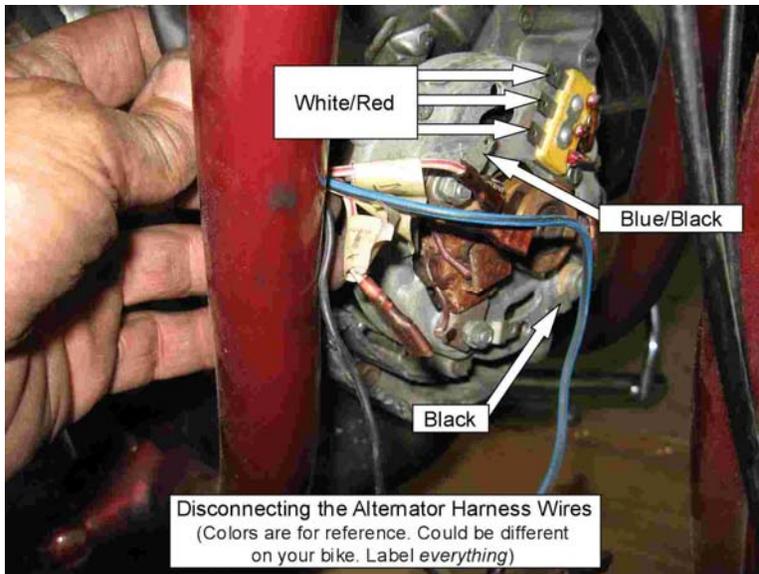
Remove the Brake Pedal Return Spring

Make sure to wear eye protection. It's a pretty heavy spring and is attached between the bottom of the brake pedal lever and the bottom, rear of the transmission.



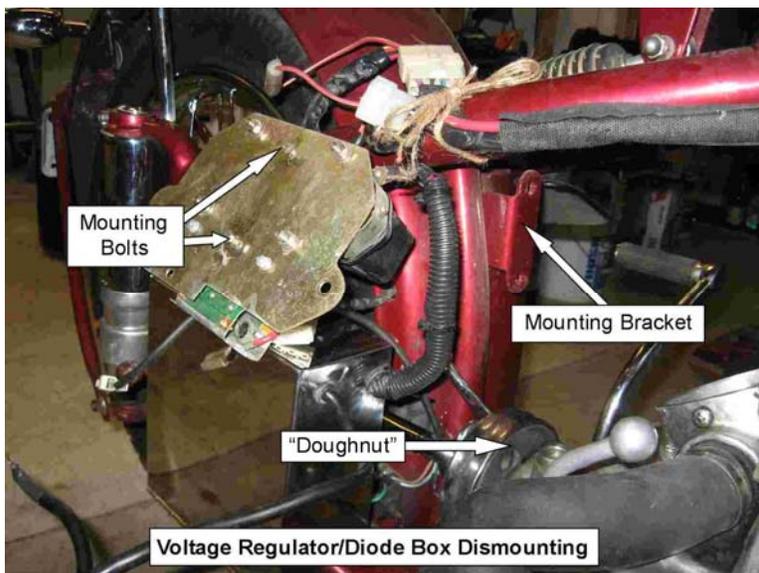
Disconnect the Alternator Wires

- Remove the front cover of the engine by taking out the two bolts holding it.
- Label all the wires that are coming from the wire harness, connected to alternator (there should be 5 of them) and make a diagram of where they go.
- Disconnect the wires and replace the front cover to protect the alternator.



Get the Voltage Regulator/Diode Box Out of the Way

The box has a black cover and is mounted on a bracket attached to the frame behind the transmission and under the seat. It is attached to the bracket with 2 small bolts facing the rear fender. Remove the two bolts. No need to disconnect any wires. Tie the box to the right side of the bike close to the rear fender and out of the way. You may have to cut a cable tie or some tape to make it reach. Notice, I took the cover off. There's some interesting stuff in there.

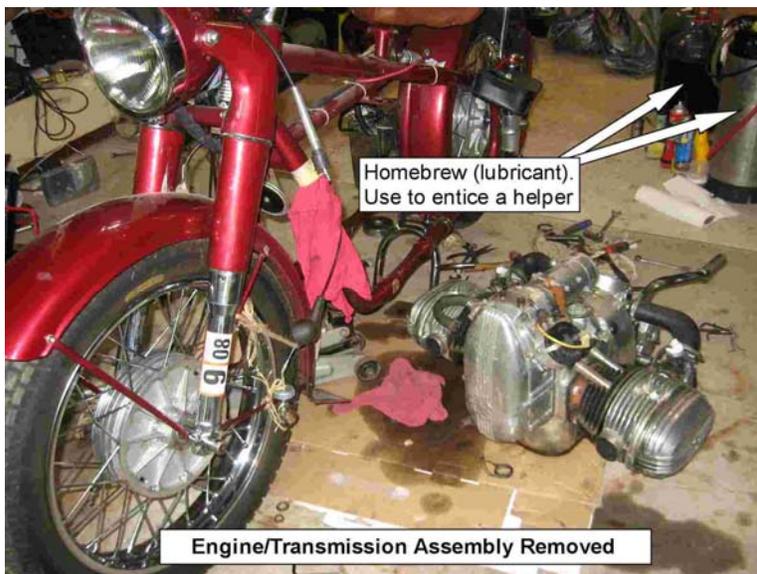


Remove the Engine/Transmission Assembly

At this point the rear transmission mount is out (long rod, threaded on both ends) and everything that was connected to the engine/transmission is off and out of the way.

- Move the hand shift lever all the way forward and make sure the clutch lever is tied forward.
- Pad the frame around the bottom and front of the engine with shop rags or an old Hawaiian shirt and some tape. You can loosen the front engine mount a little and lift the back to get rags underneath.
- Put a floor jack (with a board on top of it under the oil pan and jack it up just enough to get the front engine mount out. It doesn't take much jacking. The engine mount is another long rod (just like the one you took out of the transmission that was holding the exhaust header and foot pegs on) that goes through one side of the frame, all the way through the engine and out the other side of the frame. Get it out the same way you got the transmission mount out.
- You can jack the engine a little bit to get it off of the frame now.
- Slide the engine forward on the floor jack far enough to disengage the transmission drive pins from the rubber "doughnut" coupling it to the drive shaft.
- Remove the "doughnut".
- Slide the engine back far enough so the front cover clears the frame.
- With one person on each side, lift the engine/transmission assembly while raising the right cylinder and remove it through to the left side.
- Set it on a board.

Note: You could do this by yourself by arranging blocks of wood, etc. next to the frame beforehand but it's so much easier and safer with two people. Gerald has posted some pages from the Chinese shop manual in the changjianexperience forum, "Files" section that shows a flathead assembly being removed from the right side but it looks to me that the kick-starter could be a problem and the distributor on the overhead valve and M1M engines could get in the way if you did it that way. But, like I said, there must be a hundred ways to do it and it's not exactly rocket science.



Reinstalling the Engine/Transmission Assembly

Simply reverse the order of the above steps. Don't forget the spacers that go between the frame and engine and the frame and transmission. Remember, the thinner spacers are on the right side and the thicker ones on the left side. If you have a kickstand, it is substituted for the left (thicker) engine spacer.

