Changing The Gen II Prius Actuator

Although there is nothing especially difficult in changing this part, plan on spending 8 hours. Pneumatic tools make it easier, but are not necessary.

October, 2011

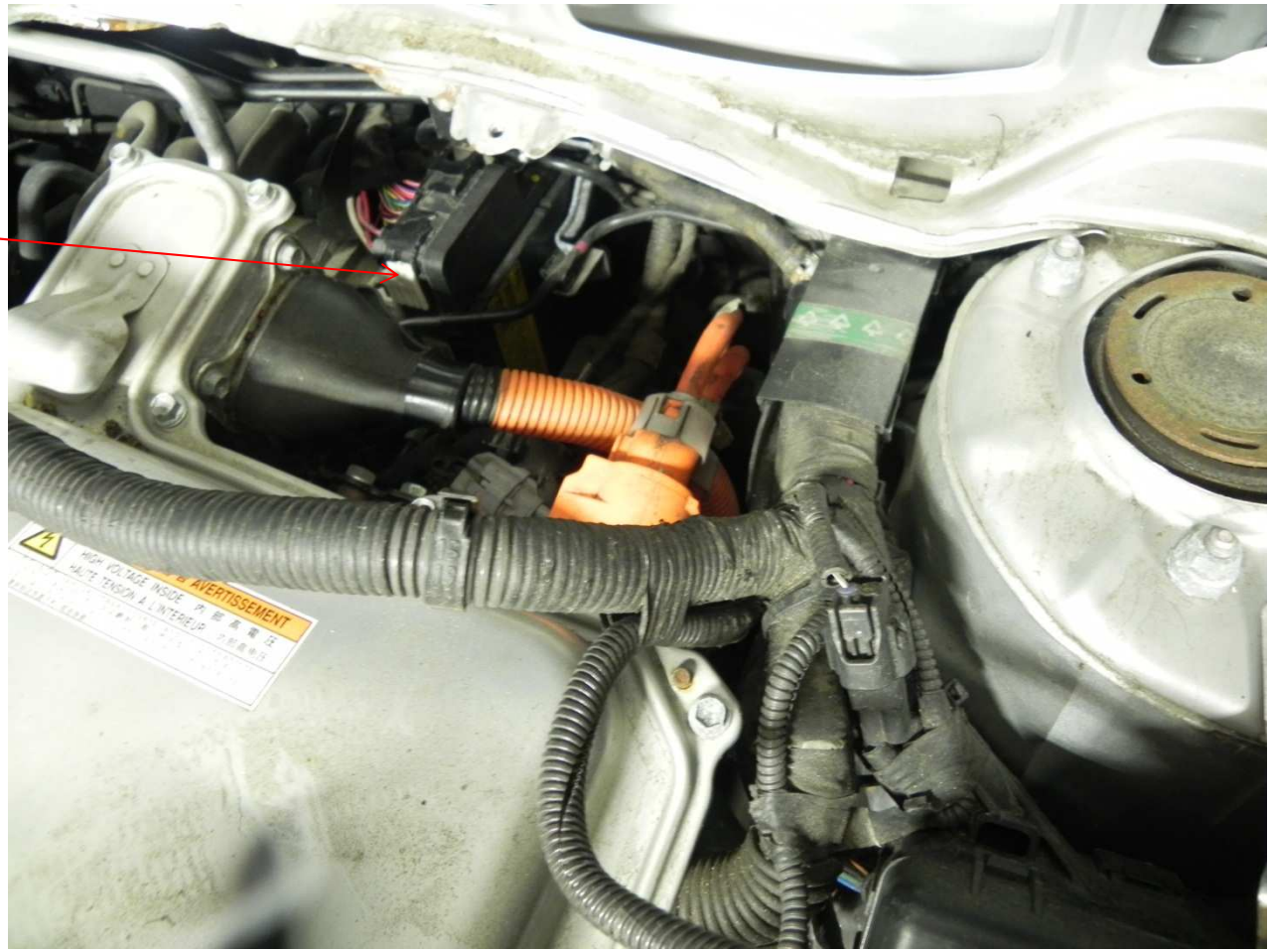
First, disconnect the negative battery terminal, which is in the battery compartment in the back of the car. To get to the actuator, open the hood (note: my car does not have the plastic shrouds and hood insulation) remove the 3 bolts holding the windshield wipers. The drivers side one has a plastic cap over the bolt. Use a 14 mm socket wrench.

Remove Wiper motor with 10 mm socket and unplug connector

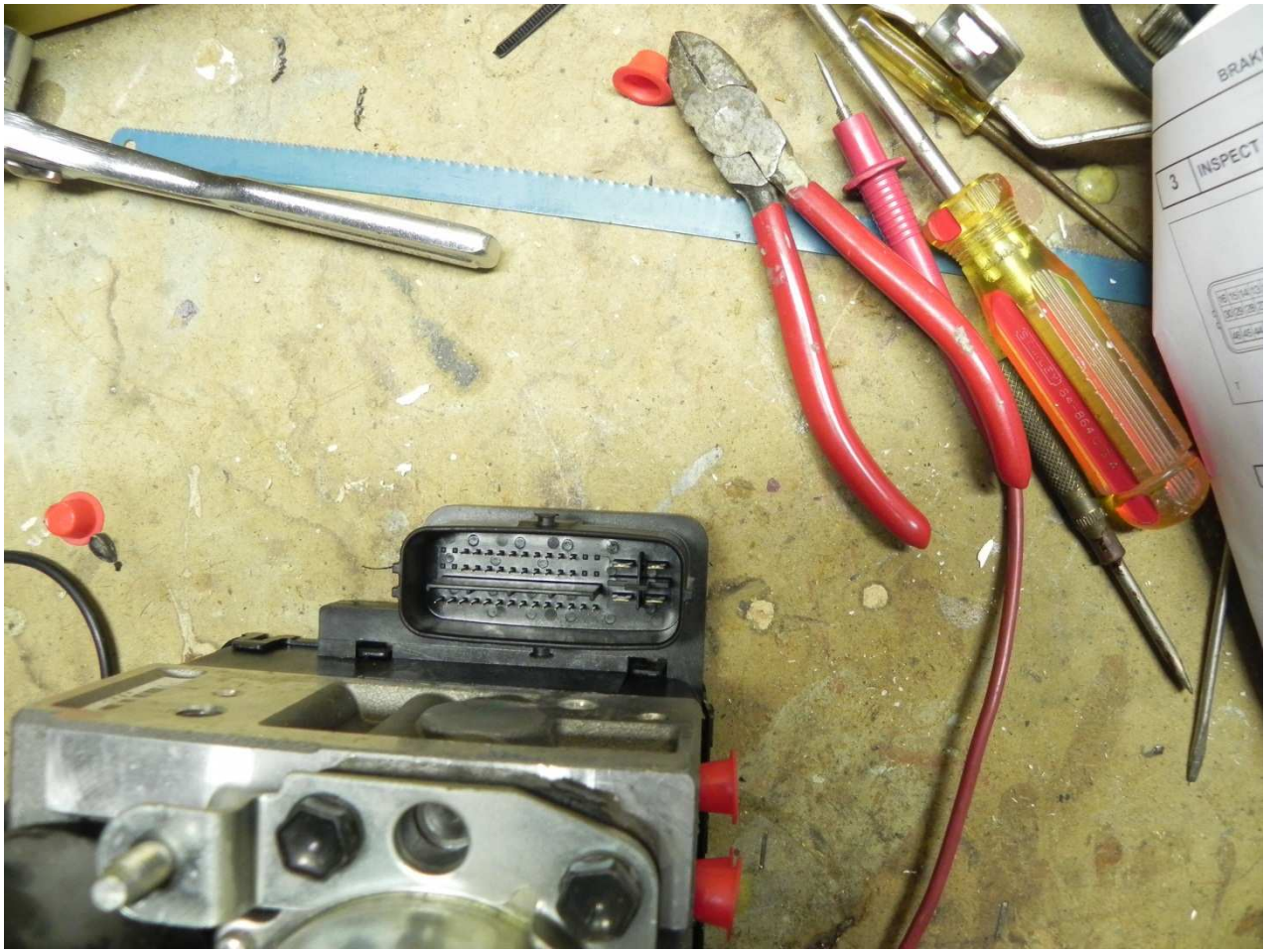
Remove cowling with 10mm socket and unbolt relay box

Top of Actuator is visible. Remove connector by pulling the white lock mechanism towards the front of the car. Then slide the cable side to the left. My connector was damaged by the accident, so the top par of the white mechanism is missing.

Pull to release

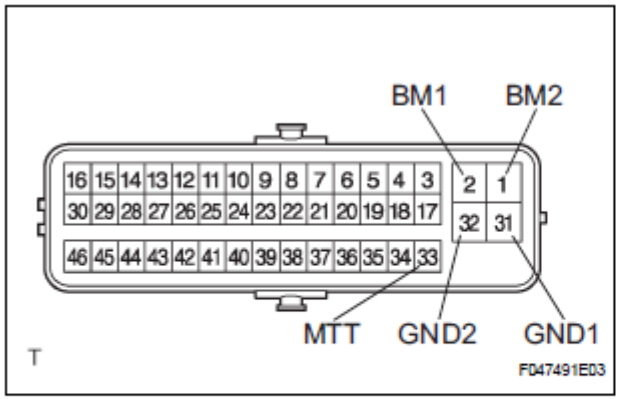


View of connector on Actuator Perform resistance measurements to check if actuator has failed. See next slide.



Measurements to be made.

On my actuator, the first measurements were 7000 ohms. On my replacement, they were about 1 ohm. However, on both units the MTT measurements were 500 ohms. I opened the unit, and found two 1000 ohms resistors in parallel inside, so 1000 ohms is correct, at least for my model, which was 44140-47050.



(a) Disconnect the brake actuator connector.

(b) Measure the resistance of the actuator.

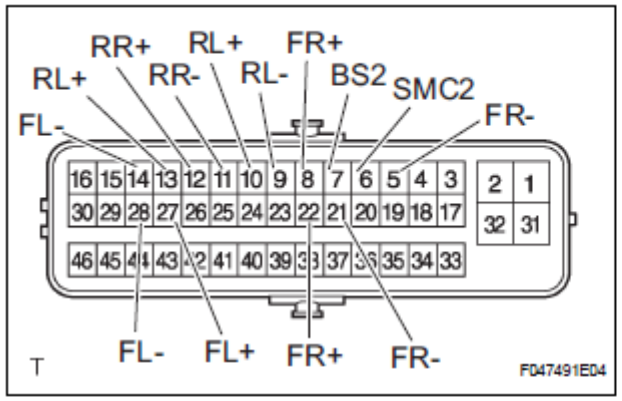
Standard resistance

Tester Connection	Specified Condition
1 (BM2) - 31 (GND1)	Below 10 Ω
2 (BM1) - 31 (GND1)	Below 10 Ω
1 (BM2) - 2 (BM1)	Below 1 Ω
31 (GND1) - 32 (GND2)	Below 1 Ω
1 (BM2) - 33 (MTT)	Approx. 10 Ω
2 (BM1) - 33 (MTT)	Approx. 10 Ω

NG → REPLACE BRAKE ACTUATOR ASSEMBLY

Measurements, continued.

Follow the table. The table is incorrect for the first two measurements, they should read 20 (SMC1)-6(SMC2) and 7(BS2)-19(BS1). All the measurements here on mine were OK.



(a) Disconnect the brake actuator connector.

(b) Measure the resistance of the actuator.

HINT:

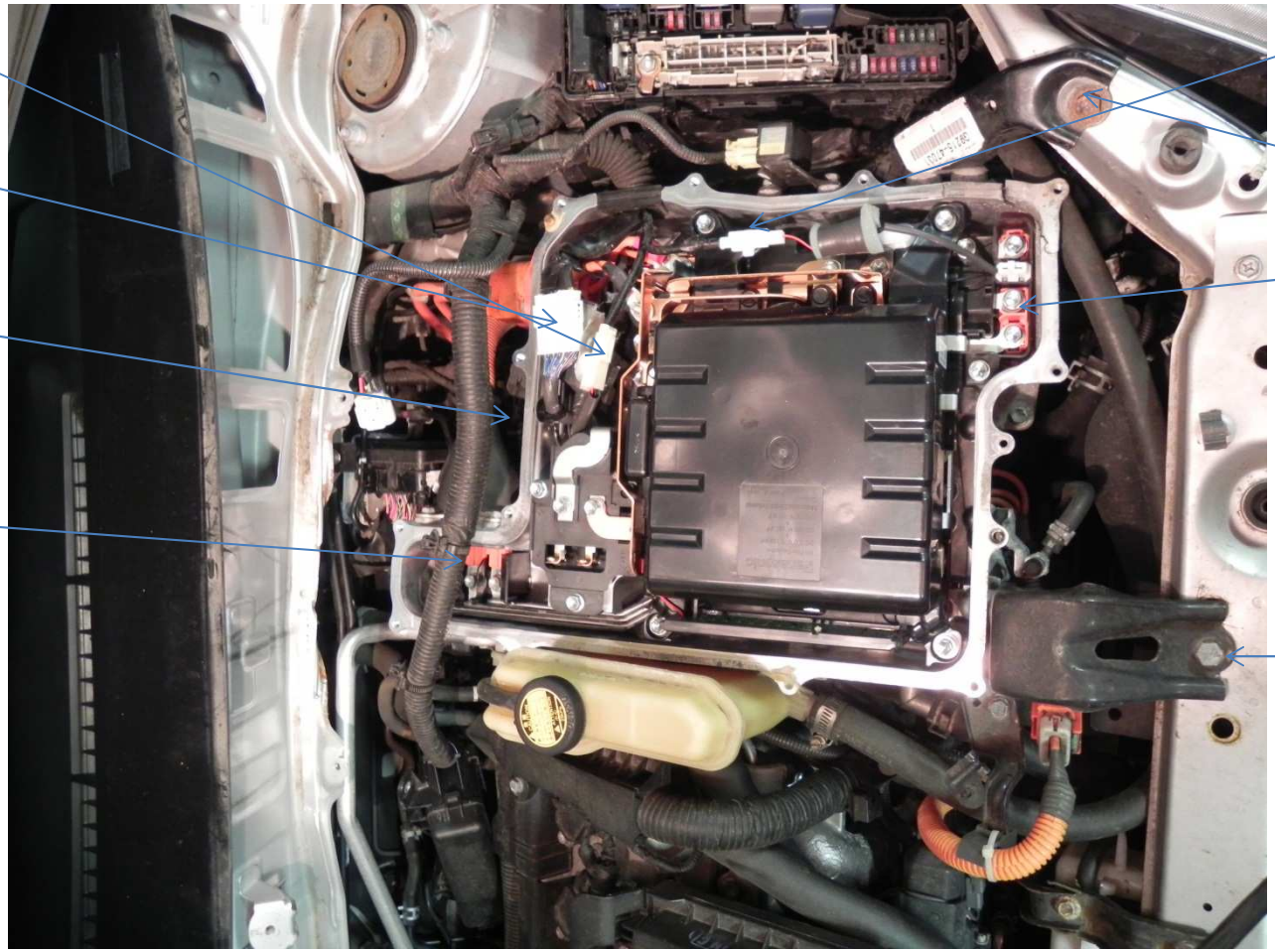
Check the brake actuator when it is cooled down.

Standard resistance

Tester Connection	Specified Condition
20 (SMC1) - 7 (BS2)	14.6 to 24.6 Ω
6 (SMC2) - 19 (BS1)	14.6 to 24.6 Ω
8 (FR+) - 5 (FR-)	3.5 to 4.3 Ω
22 (FR+) - 21 (FR-)	3.5 to 4.3 Ω
13 (FL+) - 14 (FL-)	3.5 to 4.3 Ω
27 (FL+) - 28 (FL-)	3.5 to 4.3 Ω
12 (RR+) - 11 (RR-)	3.5 to 4.3 Ω
10 (RL+) - 9 (RL-)	3.5 to 4.3 Ω

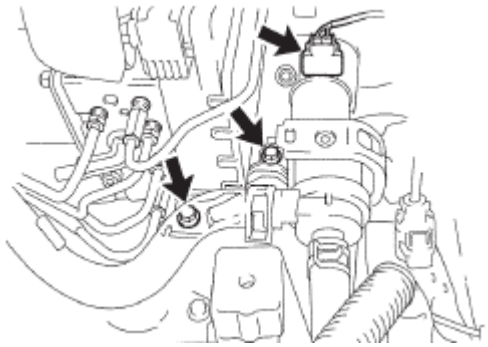
NG → REPLACE BRAKE ACTUATOR ASSEMBLY

Remove the cover from the inverter. Use a 10 mm socket. You then need to disconnect the 5 connectors. The two connectors labels unscrew have 3 bolts to remove from the inside, and two on the outside, all 10 mm. The connectors then pull out. Then remove the 3 mounting bolts. Mine were 12 and 14 mm. (I used replacement hardware, so yours might be different.) I also checked the voltage across the buses to make sure there was no charge, they all red zero, and I had the car Ready less than an hour before.

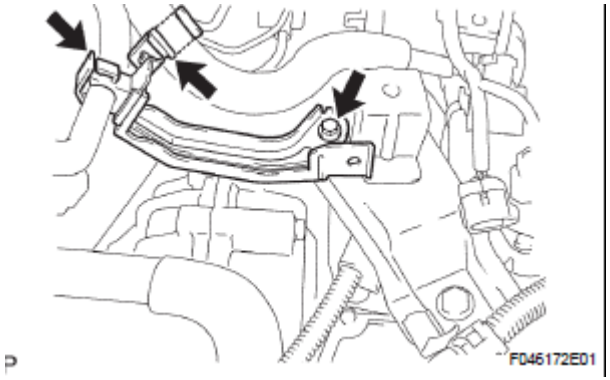


Lift up inverter, and place on left. I had to release two hose tie downs to move the inverter this far. It is not necessary to drain the fluid.

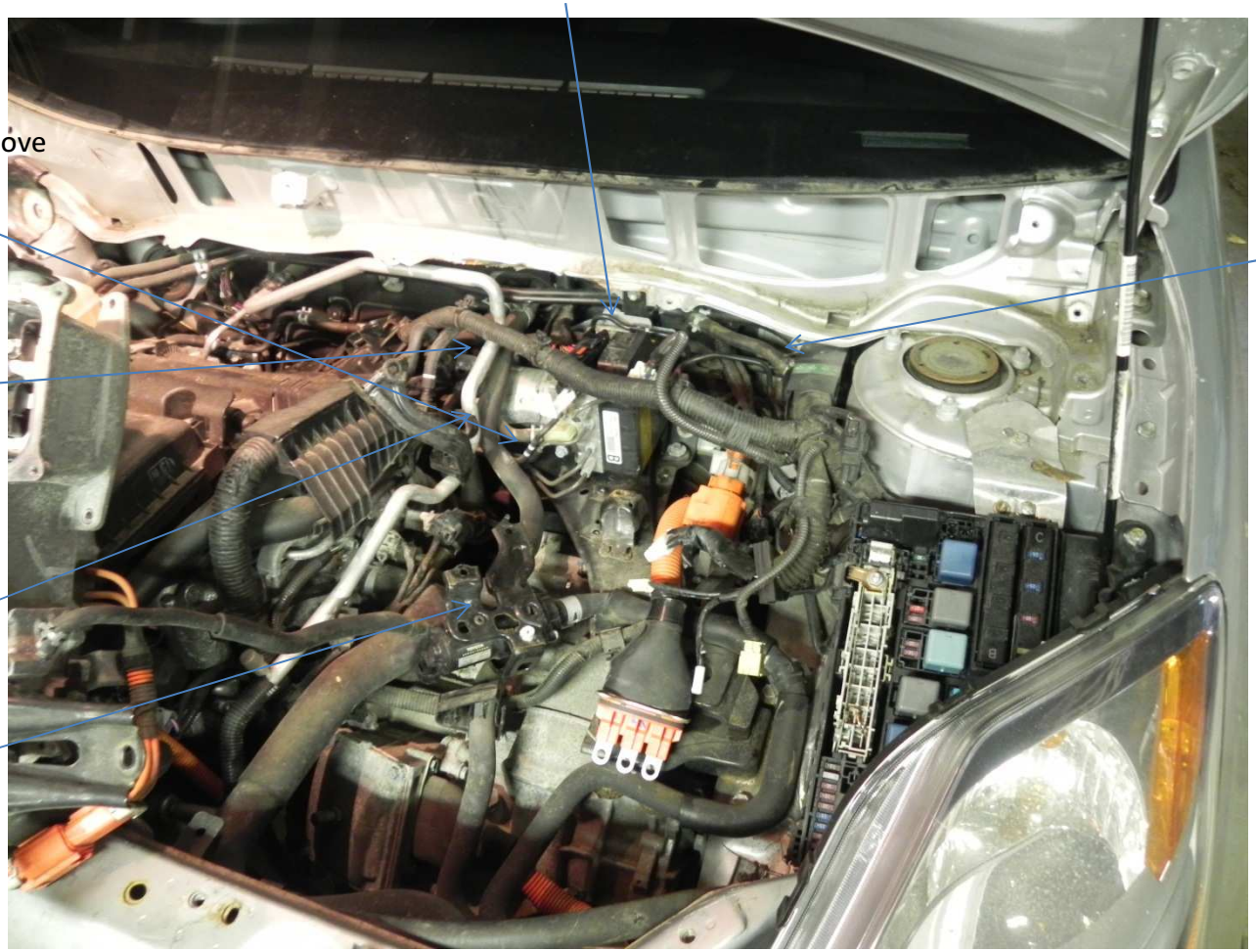
Remove Water Pump Do not remove hoses



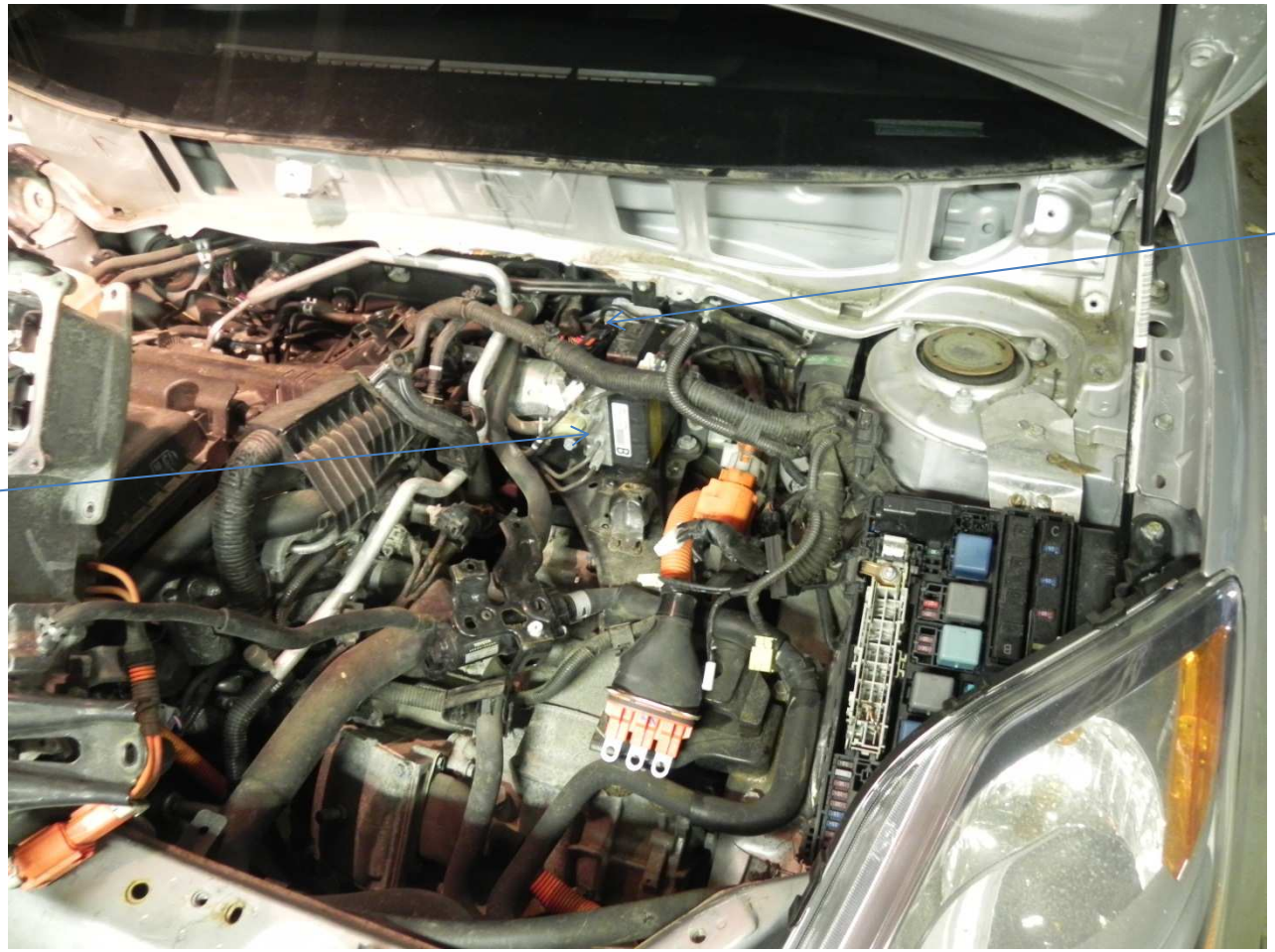
Remove Gusset



Prepare for removal



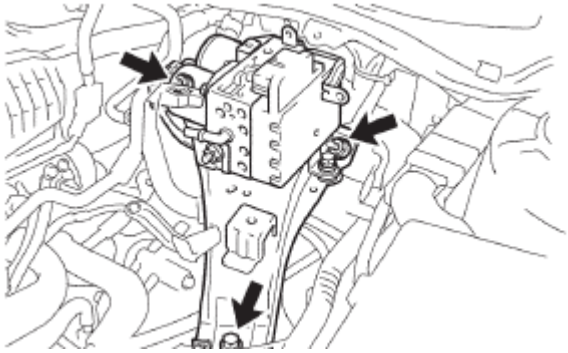
Remove brake tubes. Place towel underneath to catch spilled fluid.



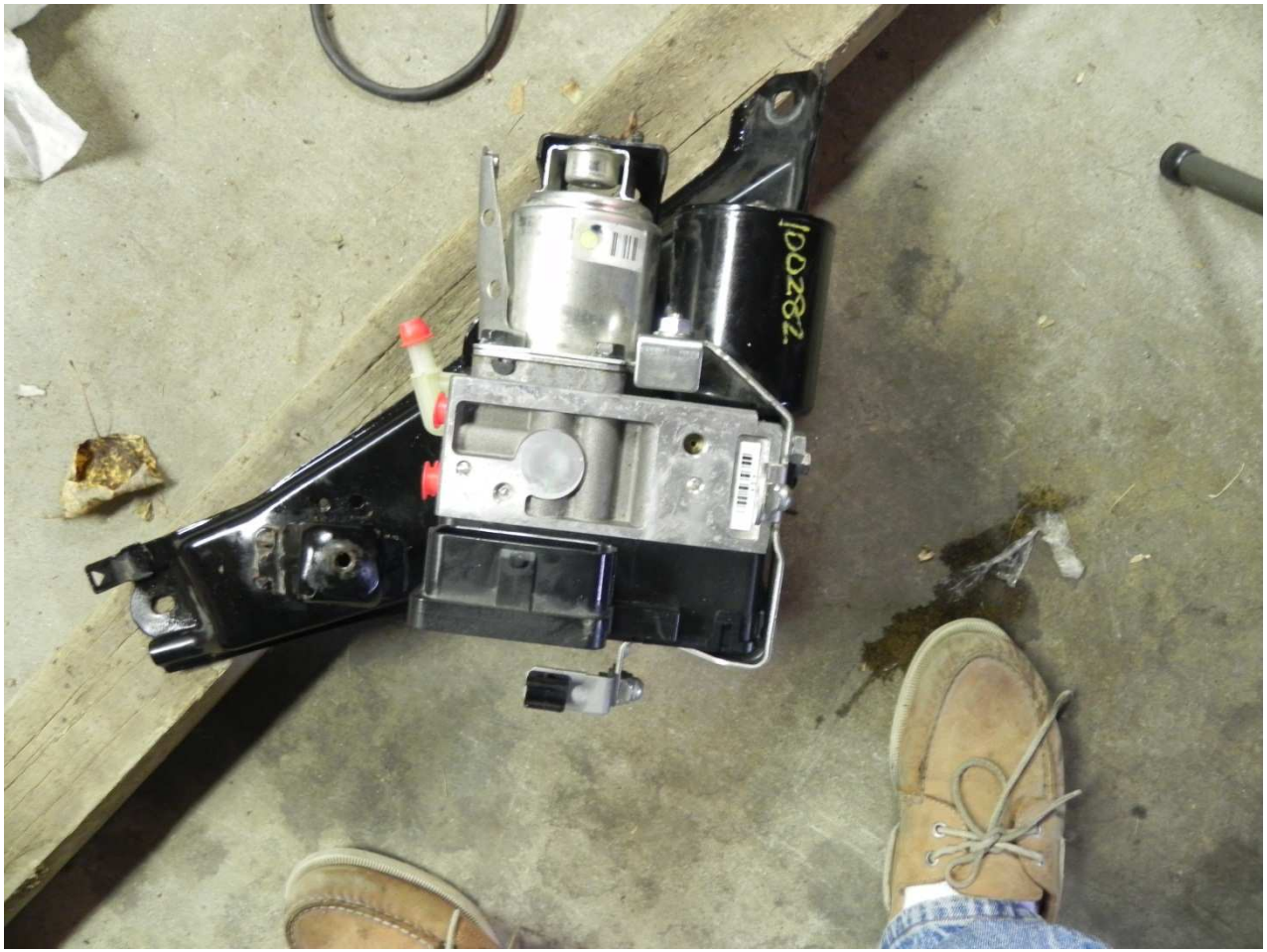
Unscrew brake tube on top

Unscrew 4 brake tubes 10 mm open end wrench

Remove 3 bolts, carefully extract actuator



Removed actuator on bracket



Remove damper from bracket, and remove bracket, replace actuator for reassembly.
Follow directions in reverse to reassemble.