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Hybrid Vehicle General Servicing Issues

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Hybrid Maintenance

Engine Oil, Transaxle, Cooling Systems, Brakes, & Batteries

Hybrid Manufacturers

- Presentation Focuses on 2006:
- Ford
  - Escape – Mariner
- Toyota
  - Prius
    - Generation I – ’01-’03
    - Generation II – ’04-’08
  - Highlander – Camry
- Honda
  - Civic

General Hybrid Safety Issues

- The High Voltage system is marked by the orange cables, but should be discharged after five (5) minutes with the ignition off. They are sealed to prevent contact, but always look for insulation damage before touching.
- With the Ignition “Off” and the key or I-key removed (stored 15 feet away from vehicle) the High Voltage is normally disabled.

This Type of Surprise is NOT Good!

- DO NOT FORGET! **Turn the ignition Off**.
  - On Toyota/Ford type systems, the engine may not be running when you pull the vehicle in, but may start at any time.
- **Can you imagine the surprise for a tech who has the oil drained and the engine decides to start?**

Early Prius Gen II

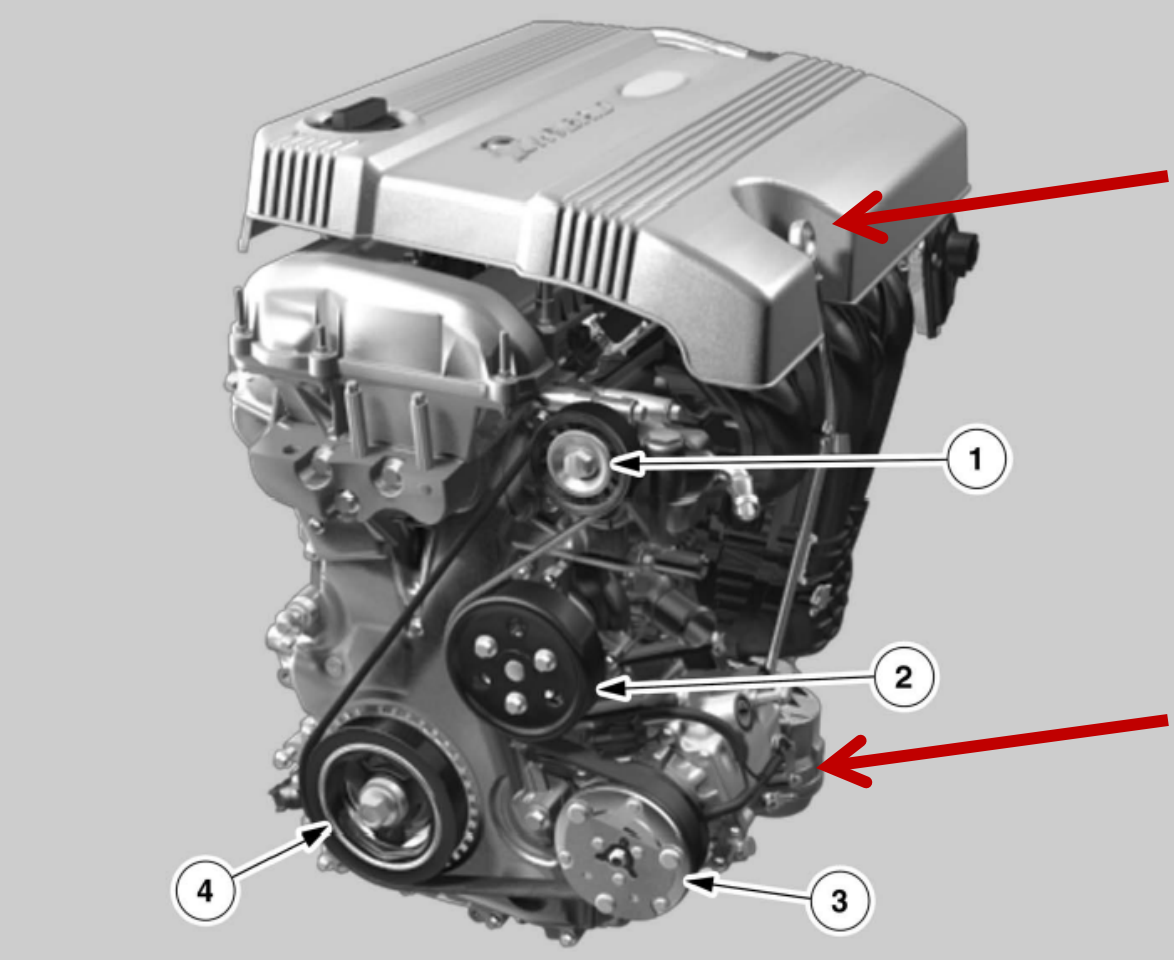
- *Tip: If you encounter a 2004 and newer Toyota Prius that will not shut down, it may be due to a malfunction in the shift control actuator. Appling the parking brake, something we should do anyway, should allow the vehicle to shut down while in park or neutral.*

Undercar Service

Lifting

- Lifting is standard on most except be sure the “Lift Pad” contacts the designated lift point, avoiding the covers for the High Voltage cables.

Ford Escape 2.3L Engine

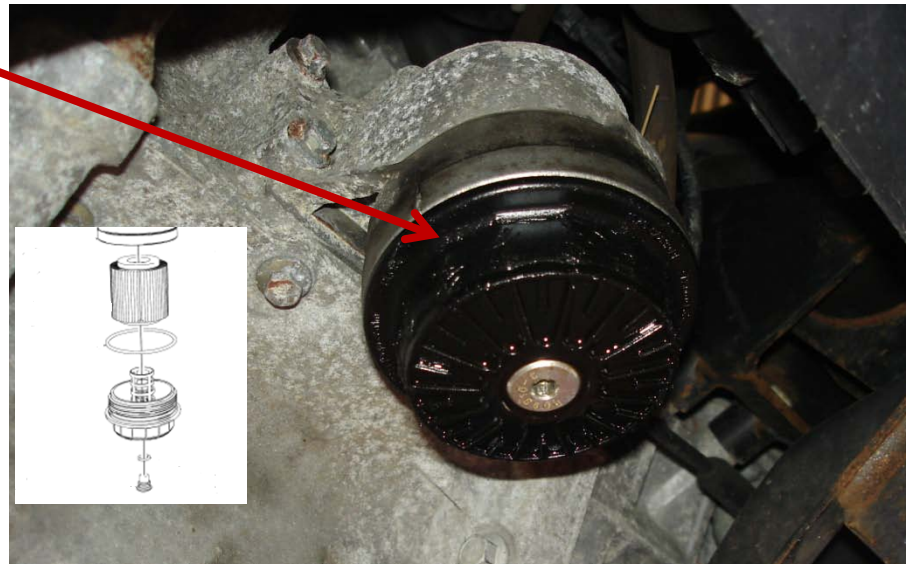


Oil Dip Stick

Oil Filter Housing

Oil Change & Filter

- Change every 5K & Refill with 4.5 qts (w/filter) of 5w20
- Plastic Oil Filter Housing
- Drain Plug
- Replace Drain plug and Housing to Block “O-rings”
- NO PLIERS Please!



Toyota Pruis 1.5L Servicing

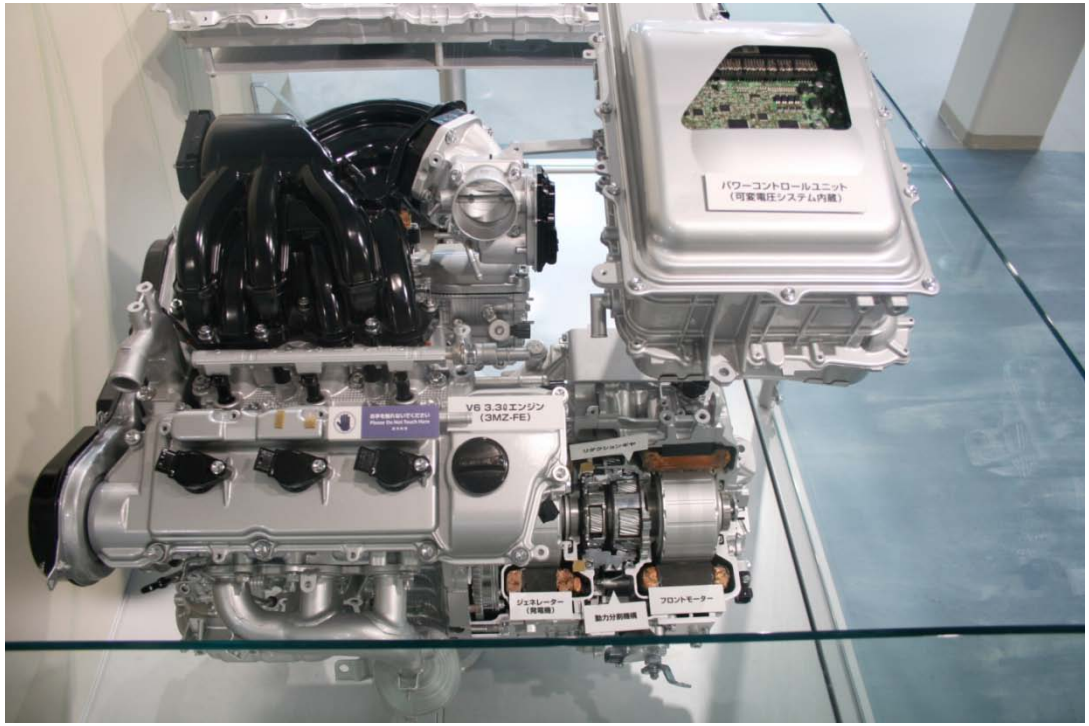
- Same as conventional vehicle.
- Change Oil every 5k mi. using 3.3 qts. w/filter of 5w30.
- Do Not Over Fill.
- Toyota TSB (EG050-40) refers to a possible no start setting a DTC P3191 (No Start) or DTC P3190 (Reduced engine power) from engine oil entering the intake.

'01 – '03 Prius……..1NZ-FXE
'04 & later Prius……..1NZ-FXE
Highlander Hybrid…….3MZ-FE

Toyota Highlander 3.3 L. Servicing

Recommended Change at 5k intervals.

Refill with 4.7 qts. w/filter of 5w30.



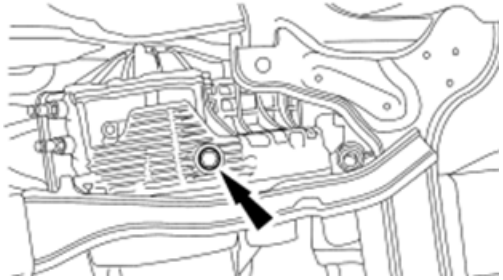
2006 Engine Oil Specification Chart

Manufacturer	Recommended Intervals	Oil Recommendations	Capacity
Ford Escape 2.3L	(US) 5,000 miles (Canada 3,000) or every 6 months	5W20 Synthetic Blend or 5W20 Premium oil	4.5 qts. w/filter
Honda Civic	3,750 miles or every 6 months	0W20 Premium oil (5W20 may be substituted)	3.4 qts. w/filter
Toyota Prius	5,000 miles or every 6 months	5W30 (API SL or ILSAC GF-4) Premium oil	3.3 qts. w/filter (TSB 12-20-04)
Toyota Highlander	5,000 miles or every 6 months	5W30 (API SL or ILSAC GF-4) Premium oil	4.7 qts. w/filter

Escape eCVT Service

Remove Drain Plug. (located under splash shield in cover plate)

Torque to 30lb-ft.

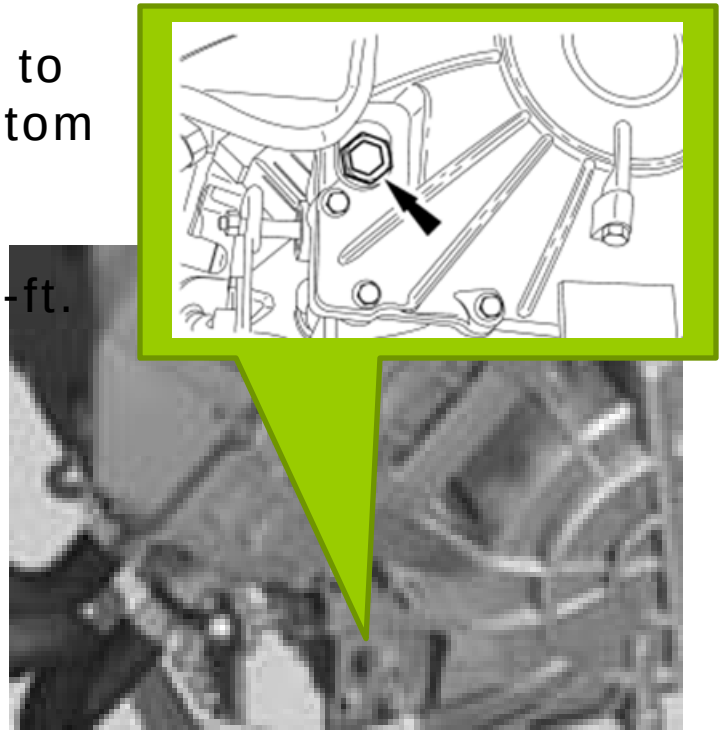


Refill with 3.7 qts. of Mercon V .
.5 mm. below to level of the bottom of fill plug.

Torque to 30lb-ft.

Note: Owners manual says 5.3 Qts. Of Mercon.

Access Panel In LH Inner Fender Shield.



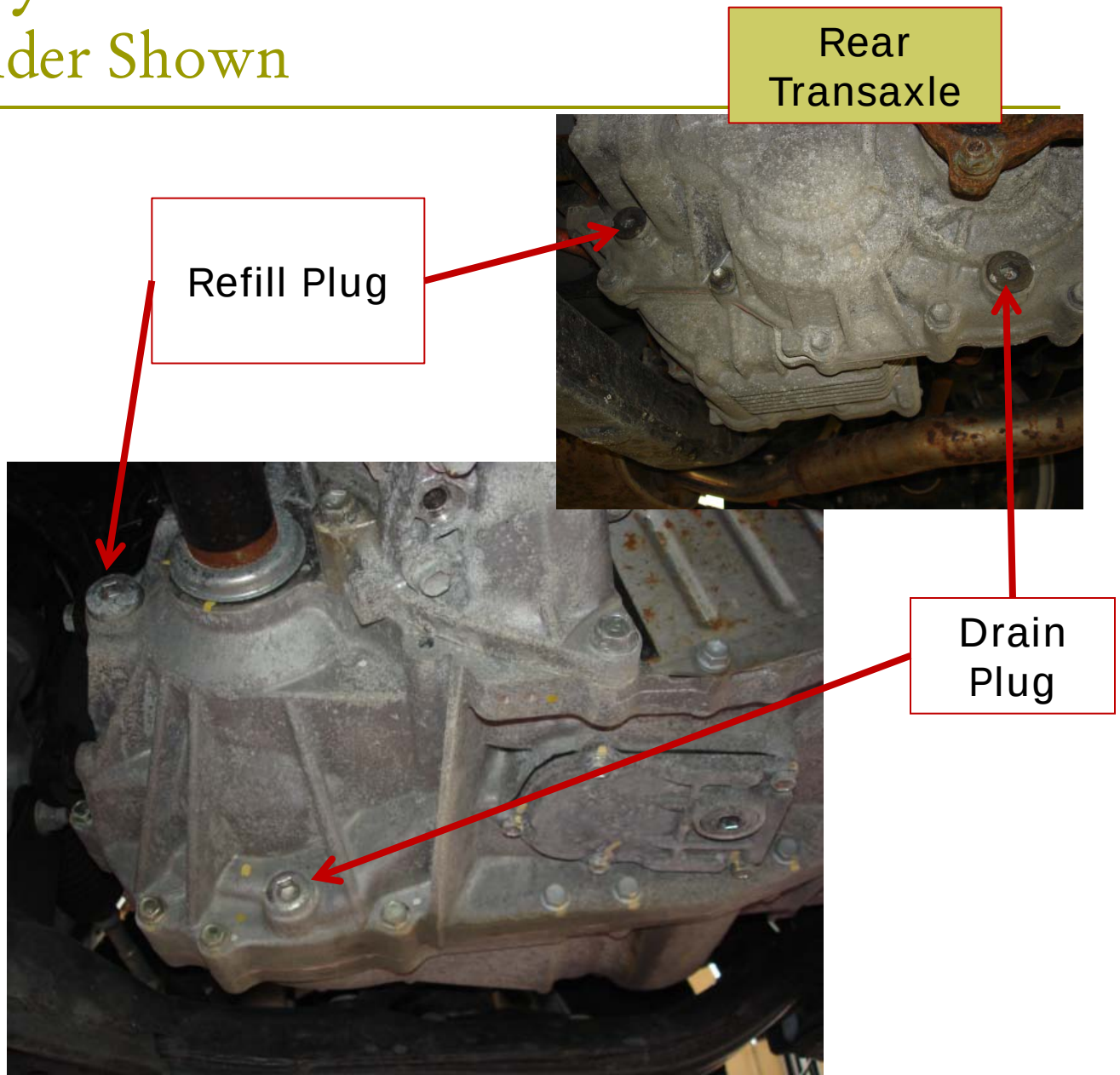
Toyota Hybrid Transaxle Service

2008 Highlander Shown

Fill level to .5mm below threads with 4.2qts. (Highlander) or

3.8qts. (Gen II Prius) of Toyota ATF WS Fluid.

Gen I uses 4.9qts. AT T-IV



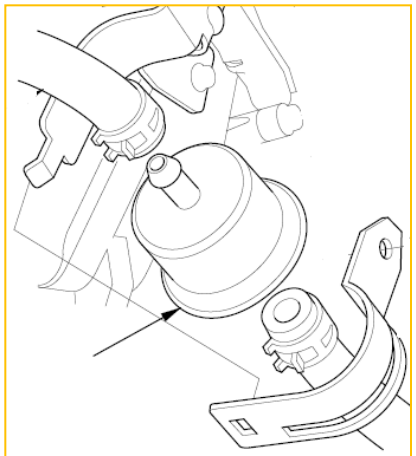
Honda Civic CVT Service

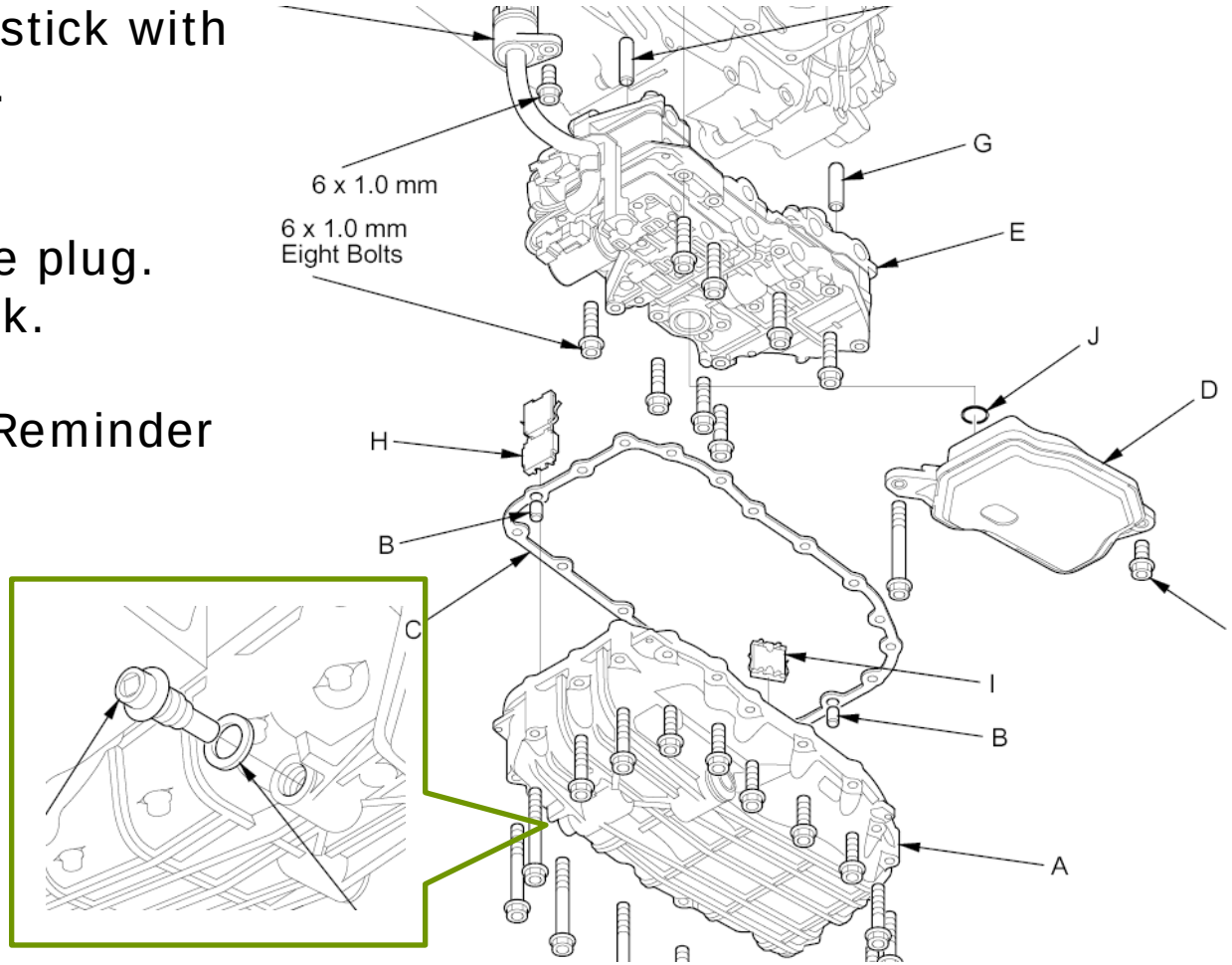
- '06 Refill through dipstick with 3qts. of Honda CVTF.

- '05 and Previous:
1. Refill through side plug.
2. Check with dipstick.

- Reset Maintenance Reminder

'06 CVT in-line filter





CVT Fluids Specification Chart

Manufacturer	Recommended Intervals	Fluid Specification	Capacity in US quarts
Ford Escape/Mariner	None	Mercon V (Note: Not Mercon CVT Blue)	3.7 (dry fill) Note: Owners manual states 5.3 qts.
Honda Civic	30,000 mi. or Maintenance reminder	Honda CVTF ATF-Z1 (Discontinued)	3
(Gen. I) Toyota Prius (Gen. II)	60,000 mi. or 48 Months "Fill for Life" Towing (60K mi. or 72 month)	"Toyota Genuine ATF T–IV" "Toyota Genuine ATF WS"	4.9 3.8
Toyota Highlander	"Fill for Life" Towing (60K mi. or 72 month)	"Toyota Genuine ATF WS"	4.2 wo/cooler 4.4 w/cooler

4x4 Rear Differential

Example: Escape

Check and Service the same as Conventional Vehicles.
2.96 pints of 80W-90 gear lube.

Fuel Filter

Most In-Tank

Escape

Maintenance Reminder Lamp Reset

Ford Escape/Mariner	1.Press and release INFO control. 2.Press the SET button to display PRESS SET FOR SYS CHCK. 3.Press and release the SET button to display OIL CHNG XXX% HOLD SET NEW. 4.Press and hold the SET button for approximately 2 seconds to display OIL CHANGE SET TO 100%. The oil life is now set to 100%.
2006 Honda Civic	1.Turn the ignition switch to ON (II). 2.Push and release the SEL/RESET button repeatedly until the engine oil life indicator is displayed. 3.Press and hold the SEL/RESET button for about 10 seconds. The engine oil life indicator and the maintenance item code(s) will blink, then release the button. NOTE: If you are resetting the display when the engine oil life is more than 15 %, make sure any maintenance item(s) requiring service are done before resetting the display. 4.Press and hold the SEL/RESET button for another 5 seconds. The maintenance item code(s) will disappear, and the engine oil life will reset to ‘‘100’’.
Toyota Prius	1.Press the “POWER” switch to the “OFF” mode with the odometer reading displayed. 2.Press the “POWER” switch twice to select the “IG－ON” mode while holding down the trip meter reset button for at least 5 seconds. 3.The odometer indicates “000000” and the light goes off. *If the system fails to reset, the engine oil reminder light will remain flashing.
Toyota Highlander	1.Set the Trip Meter “A” reading shown before turn the POWER button OFF. 2.While pressing the trip meter reset button, set the POWER switch ON. 3.Continue to press and hold the button until “COMPLETE” appears on the multi-information display.

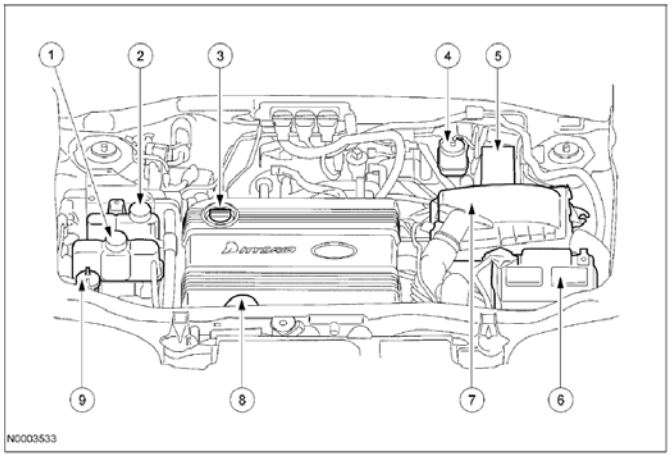
Underhood Service

Underhood Area

’04 Civic

Escape

Maintenance Check Points

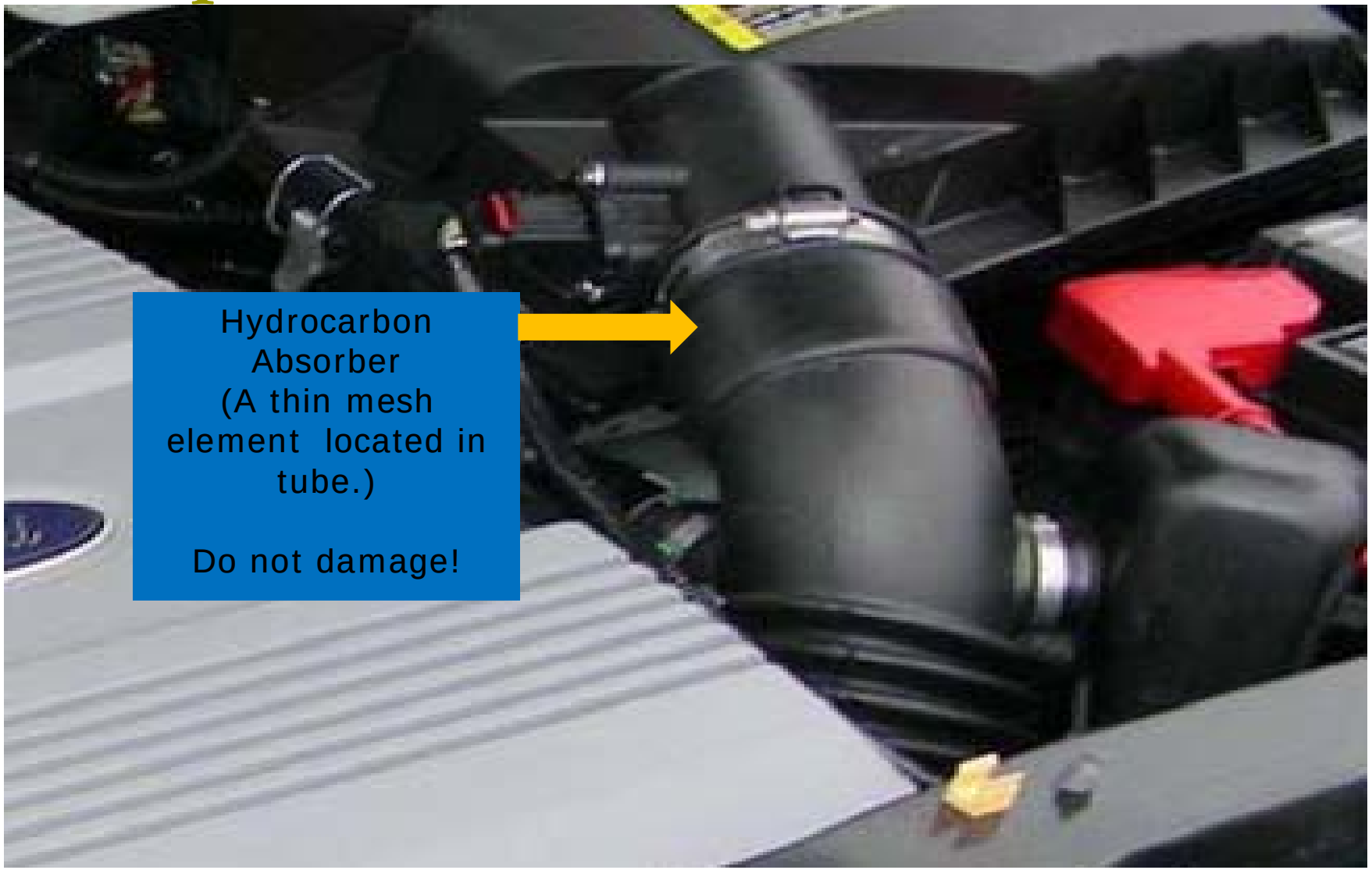


Maintenance Check Points

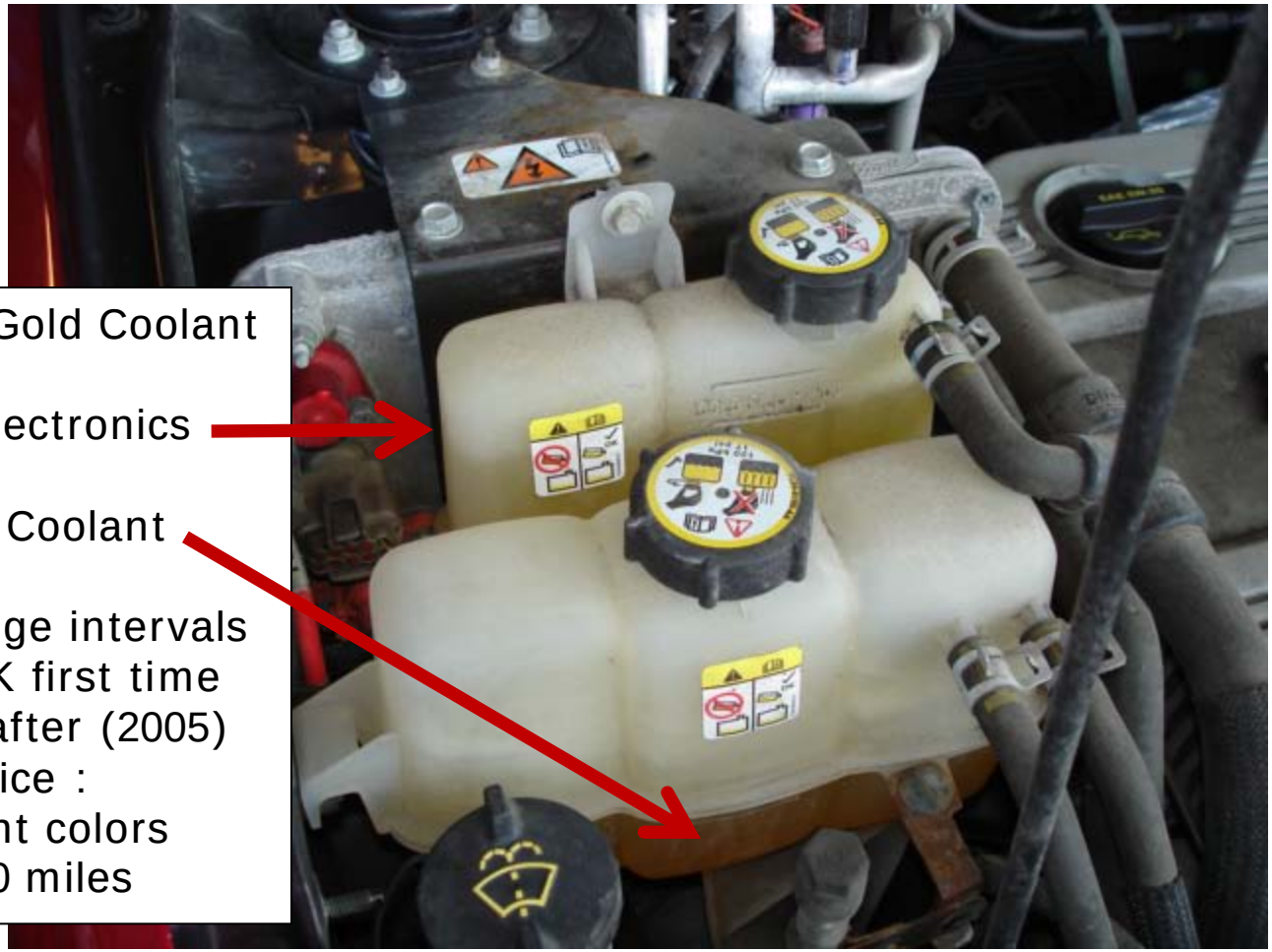
Item	Description
1	Engine Coolant Reservoir
2	Motor/Electronics (M/E) Coolant Reservoir
3	Engine Oil Filler Cap
4	Brake Fluid Reservoir
5	Power Distribution Box

Item	Description
6	Battery
7	Engine Air Filter Assembly
8	Engine Oil Dipstick
9	Windshield Washer Fluid Reservoir

Escape Air Filter



Escape Dual Coolant Reservoirs



Motorcraft Gold Coolant

Motor/Electronics

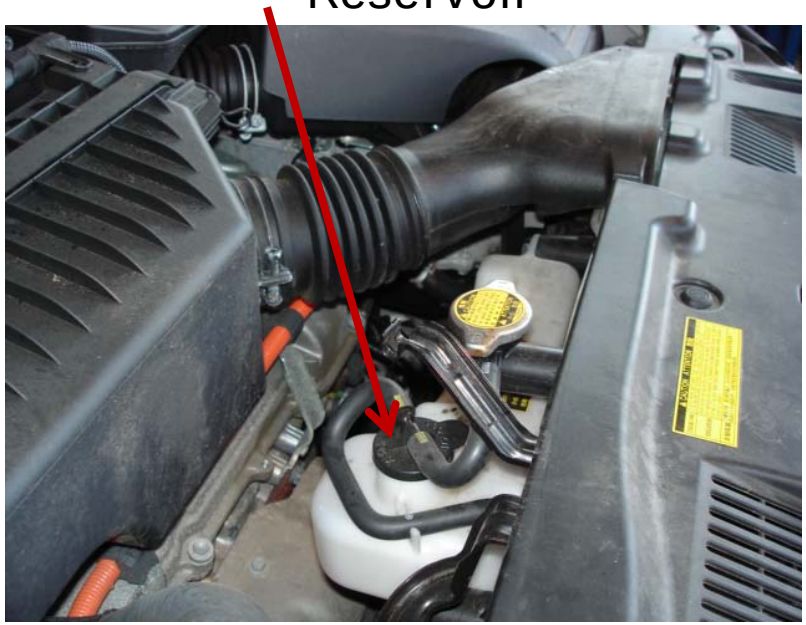
Engine Coolant

Same change intervals
5 yrs/100K first time
3yrs/50K after (2005)
Notice :
Different colors
92,800 miles

Highlander Coolant Reservoirs

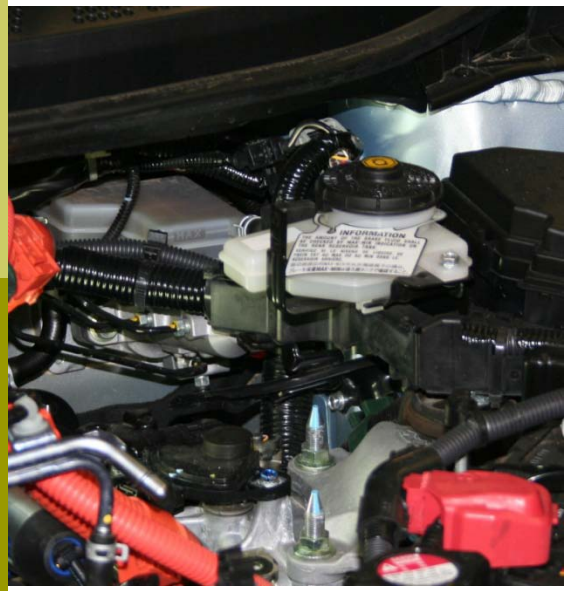
HV Coolant Reservoir

ICE Coolant Reservoir



Brake Fluid

Honda Civic



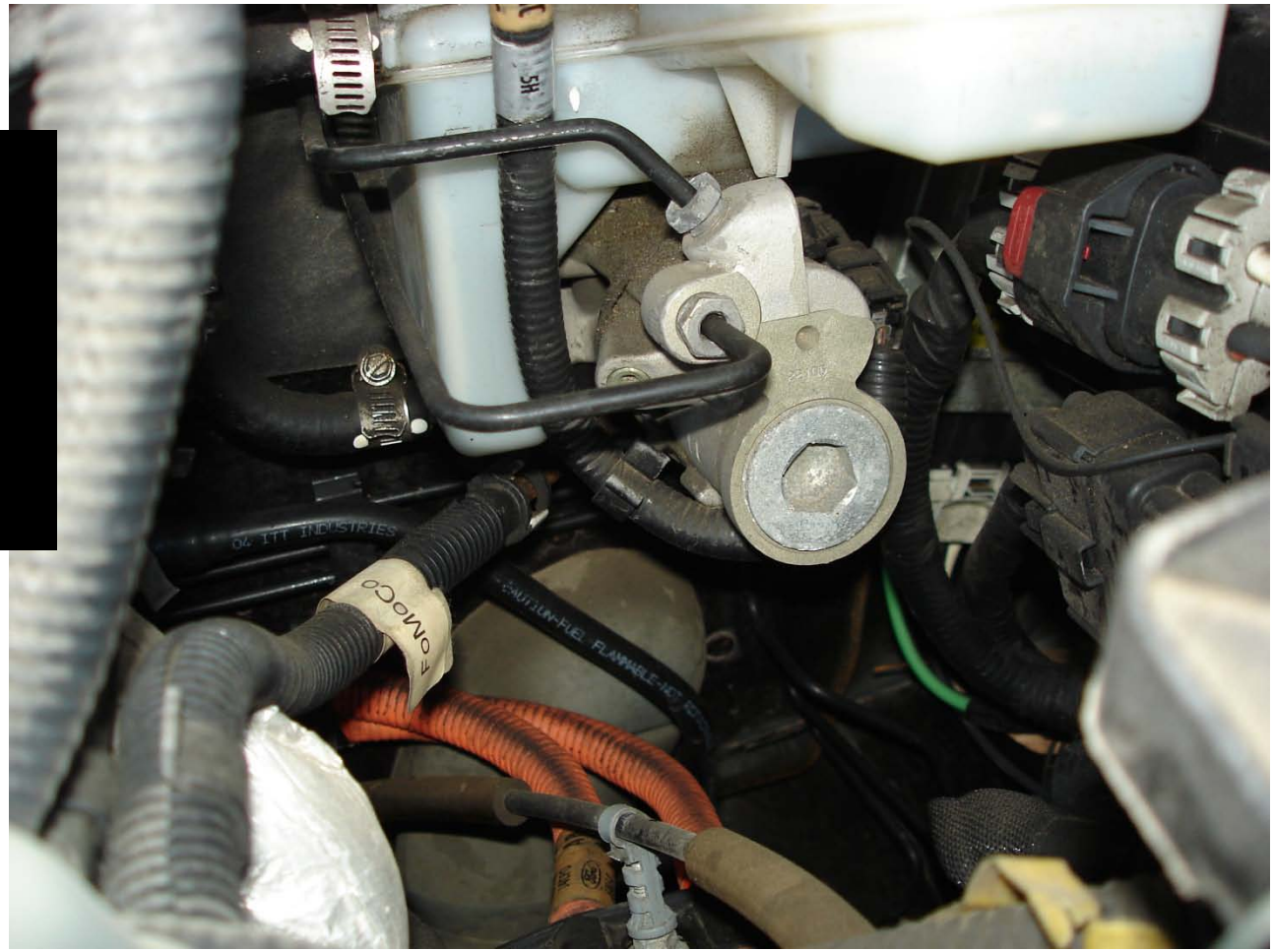
Escape

Highlander

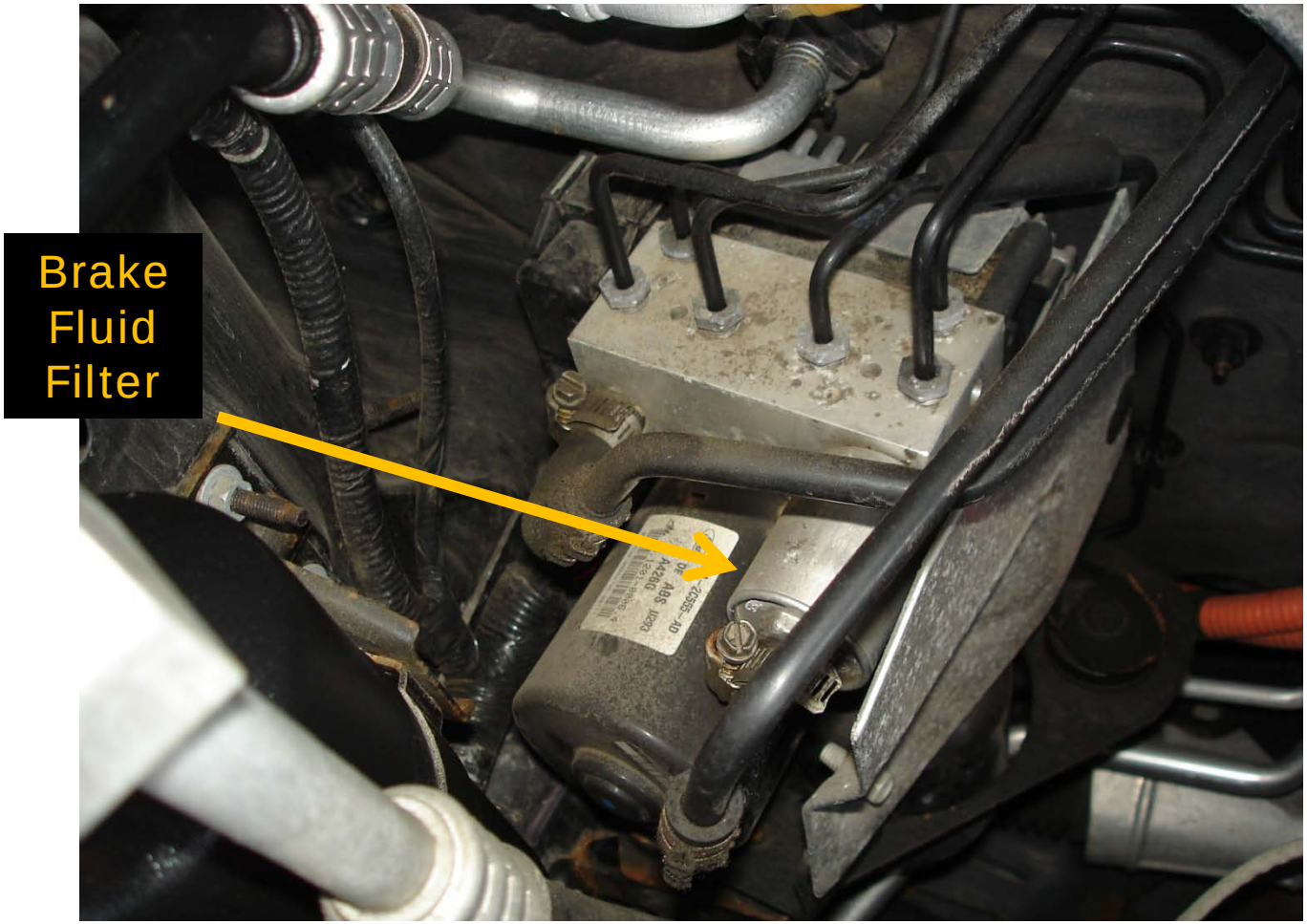
Escape Master Cylinder

Screw Clamps

Other clamps leaked?



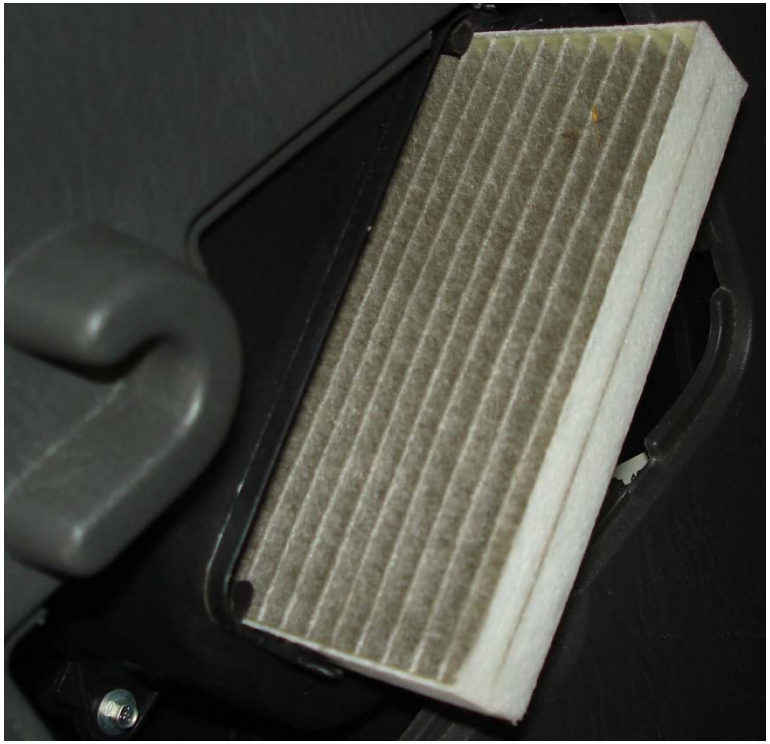
’06 Escape Brake Actuator Module



Escape Battery (A/C) Cooling System

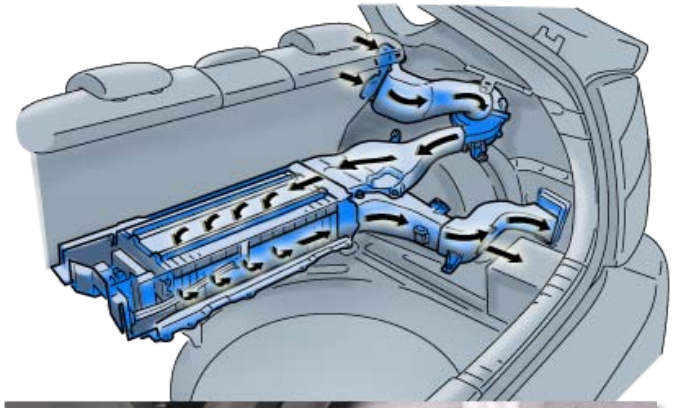
Battery (A/C)Cooling Fil

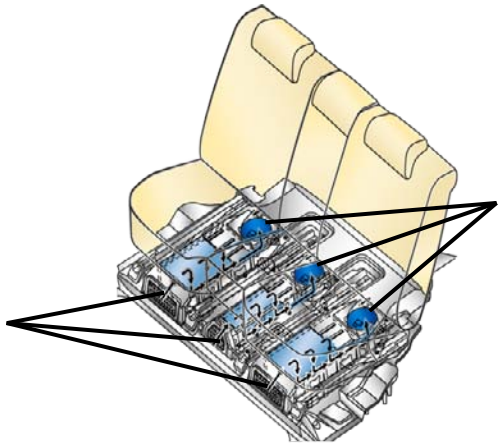
Access Panel
Located in rear cargo area, left side.
Inspect every 10-15K mi.
Change every 20-30K mi.



HV Traction Battery Cooling

- Honda and Toyota
  - Pulls Air Internally from Passenger Compartment.
  - Check For Clothes or Debris Blocking intake.

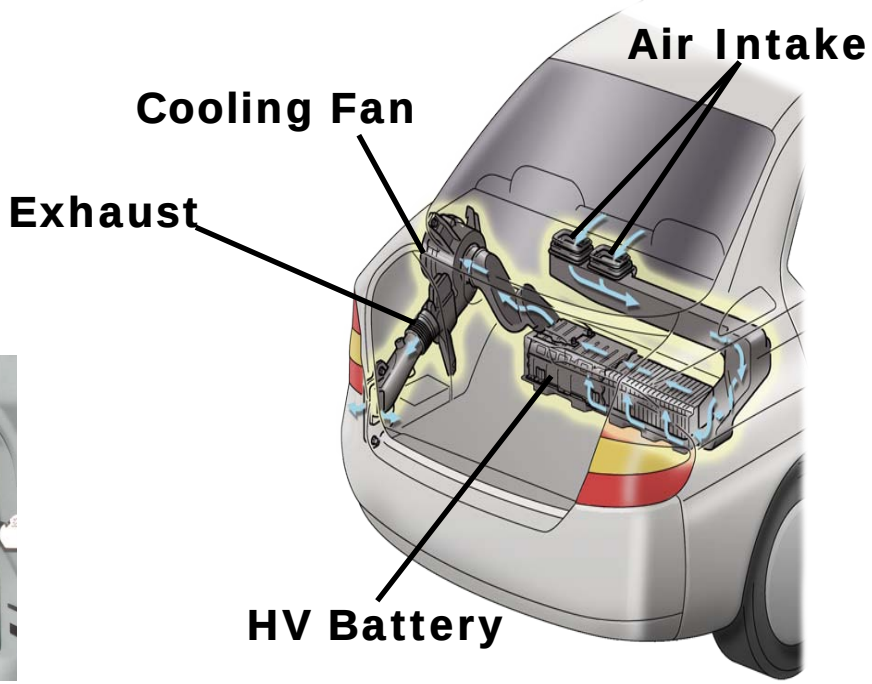




HV Traction Battery Cooling

- Gen I Prius and Honda Civic
  - Air intake at rear deck area.

Gen I Prius



Honda Civic

Rear Deck Intake

Trunk Blower

Cooling System Service

Escape ICE Cooling System Service

- First change @ 6yrs/100K – 3yrs/50K there after.
- <80% of coolant capacity can be recovered.
- Drain Radiator As Normal.
- Can Be Flushed as Normal.
- Motorcraft Premium Gold Engine Coolant ONLY.
- 50/50% Concentration (max 60/40% – min 40/60%).
- Radiator Re-Filler Recommended.
- Can Be Refilled with out.
- Special Flushing Procedure Recommended.
- Stop Leak Pellets Turn Yellow coolant Tan.

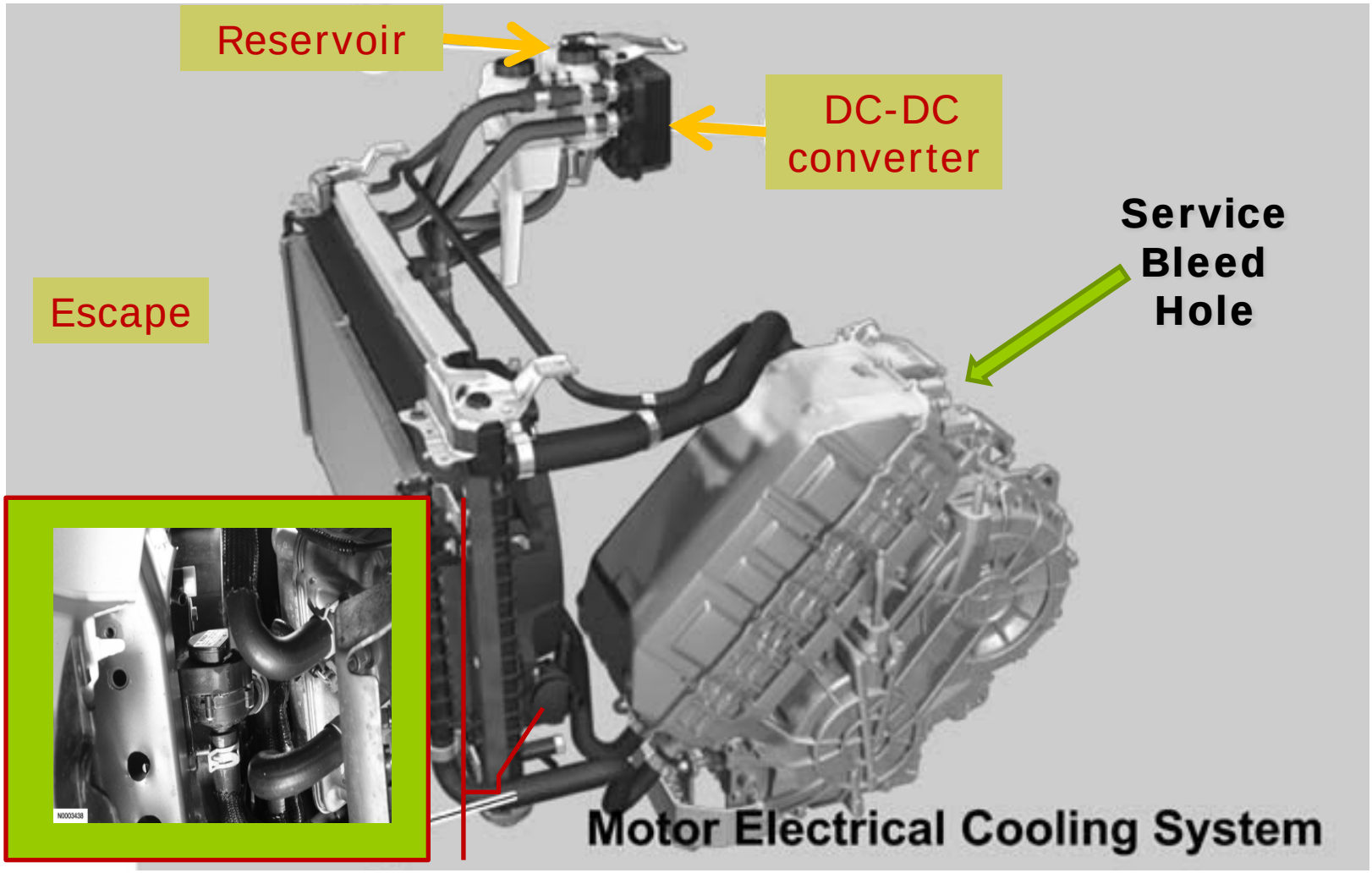
Escape ICE: Steps for Re-Filling

1. Fill Coolant Reserve Bottle (degas bottle) to proper level.
2. Select the maximum heater temperature and blower motor speed settings. Position the control to discharge air at vents in the instrument panel.
3. Start the engine and allow to idle. While engine is idling, feel for hot air at vents.
4. Keep Bottle Full.
5. Make sure it is not air locked.
6. Upper hose HOT and Gauge at normal.
7. Shut the engine OFF and allow to cool.
8. Check the engine for coolant leaks.
9. Check the engine coolant level in degas bottle and fill as necessary.
10. Turn A/C to MAX to keep engine running or Enter: Diagnostic Mode.

Escape
Engine Running Diagnostic Mode

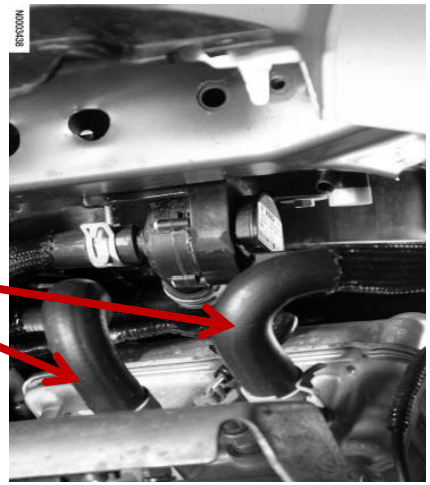
1. Parking brake on.
2. In PARK.
3. Engine Off Key ON.
4. Within 5 seconds of ON, go WOT & hold for 10 sec.
5. Release pedal, shift to DRIVE & go WOT in 5 sec.
6. Hold @ WOT for 10 seconds .
7. Release accelerator pedal and shift to PARK.
8. Watch Yellow Wrench Indicator Light in instrument panel .
9. Flashes at ONE second intervals.
10. Do Not turn off key, START engine.
11. Exit Diagnostic mode by: Key off or Moving Shifter.
12. Engine Starting Diagnostic Mode by accident , step 11.

HV Cooling System Overview



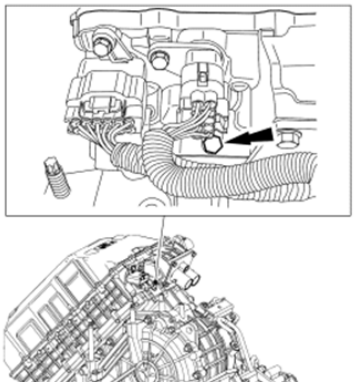
Escape Transaxle Cooling System Service

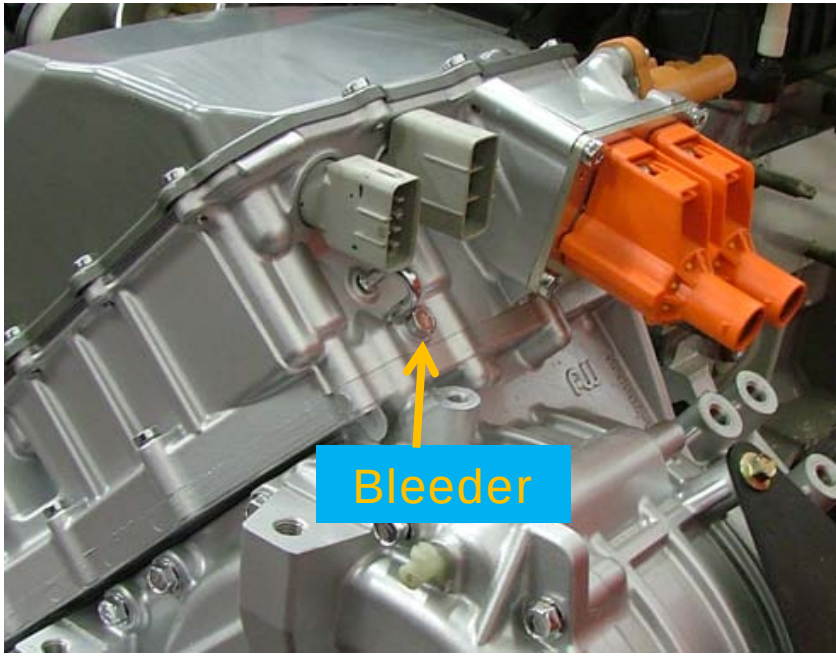
- Draining:
  1. Remove the LH splash shield.
  2. Remove transaxle coolant hoses.
     (Front Lower LH side of Transaxle)
  3. Install hoses & shield after draining.



Escape Transaxle Cooling System Service

- Refilling
  1. Ford Tool: RADKITPLUS bleeder.
  - Manual:
  1. Fill Reservoir w/Ford Gold Coolant. (3.7qts)
  2. Loosen bleeders locate on top, LH rear of transaxle until coolant flows out.
  3. Turn ignition On to run pump.
  4. Can burp air by loosening bleeder.
  5. Most air escapes in the tank.
  6. Keep tank to full level.

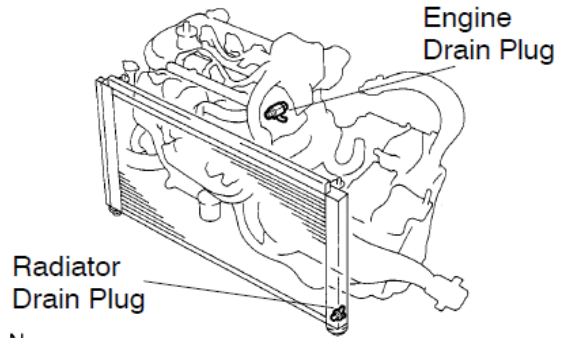




Prius Gen I
ICE Cooling Systems Service

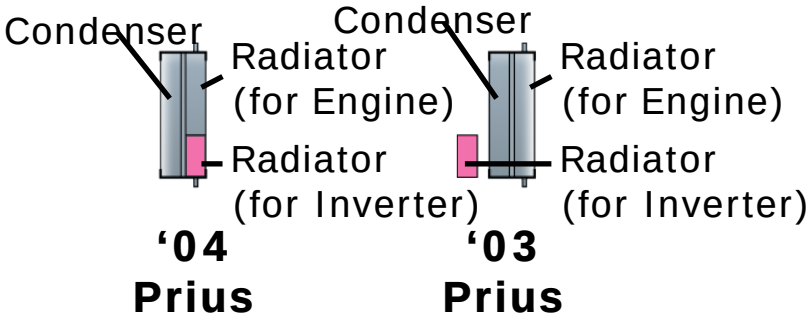
1. Drain Block And Radiator.
2. Fill (5.2 qts. cap) w/ Toyota SLLC or equivalent @ 50/50%. (Use demineralized water)
3. Turn A/C to MAX or Use “Inspection Mode “ for continuous ICE operation.
4. Install cap and alternately idle and rev for 2 min.
5. Stop engine and refill while squeezing both radiator hoses.
6. Run ICE continuously @ <2500 until fan starts.
7. Check level and bleed circulating pump.

Gen I



Prius Gen I
ICE Cooling Systems Service (cont.)

- Bleed air from water pump:
  1. Radiator cap Off.
  2. Key On Engine Off.
  3. Blower on LO.
  4. Temp Dial @ MAX Hot.
  5. Run pump until absent of sound from heater core.
  6. Fill radiator and replace cap.
  7. Fill reservoir tank to MAX.



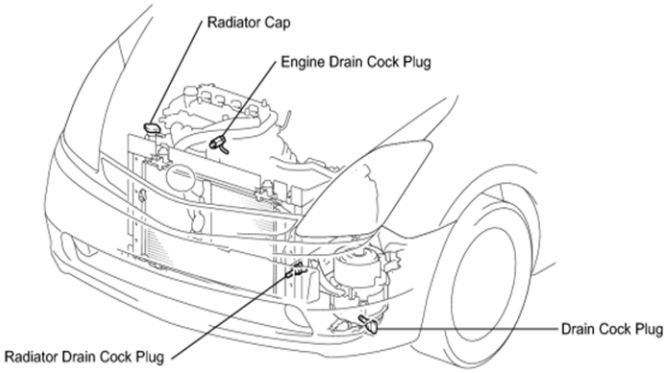
Prius Gen I Inspection Mode

- With-in 60 sec.
  1. Ignition switch OFF then ON.
  2. Shifter in Park.
  3. WOT 2 times.
  4. Shift to Neutral.
  5. WOT 2 times.
  6. Shift Back to Park.
  7. Again, WOT 2 times.
  8. Hybrid system warning light flashes (multi–center display).
  9. Start ICE and will idle @ 1,000 RPMs.

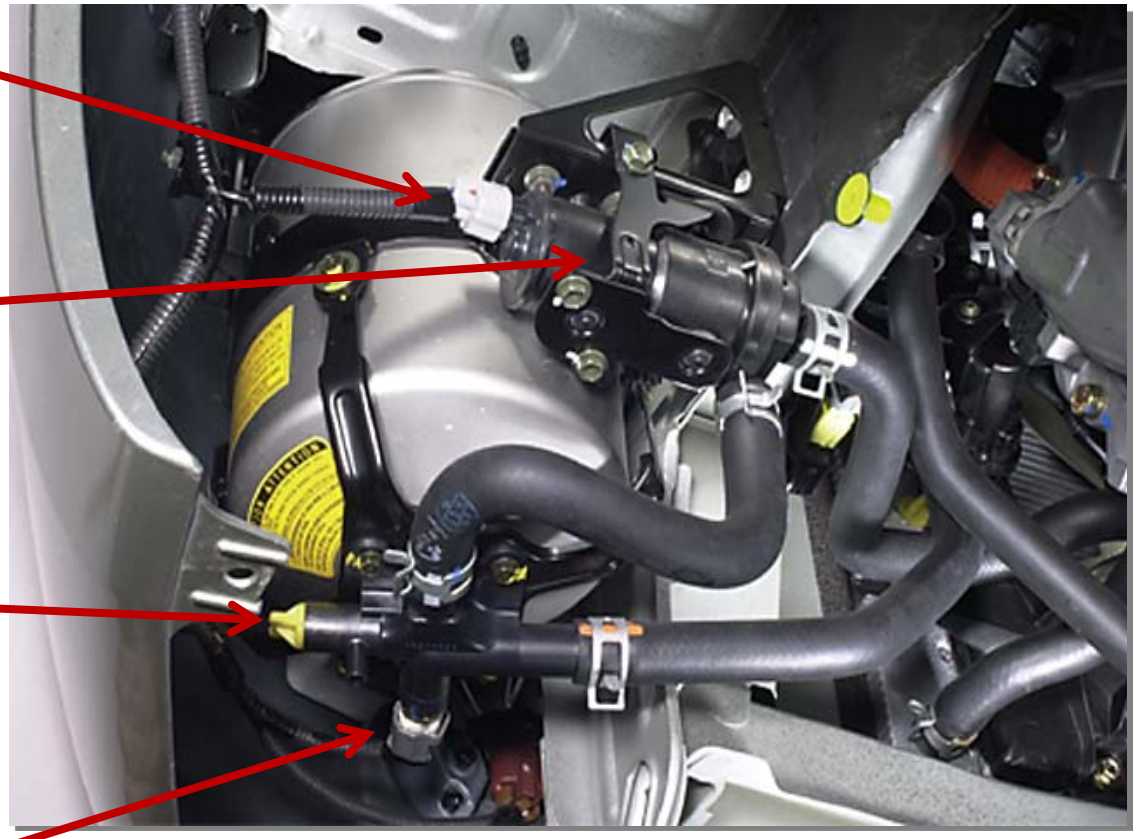
- Note: If master warning light is on from entering mode clear codes.

Prius Gen II
ICE Cooling System Service

- Draining Procedures:
  1. Remove Radiator Support, Engine LH Cover, & Front LH Fender Liner.
  2. Disconnect Heat Storage Pump Connector.
  3. Loosen All Three Drains.
     (Use hoses connected to all three Drain Cocks)
  4. Remove Radiator Cap.
  5. Drain Coolant Tank.
  6. Tighten Drains.



Prius Gen II Coolant Pre-Heat Tank



Prius Gen II
ICE Cooling System Service

- Refill Procedure

1. Connect a vinyl hose from radiator bleeder plug to reservoir being careful that tube end is submerged in New Coolant.
2. On left side of radiator support, Loosen radiator bleeder.

   (6 mm socket hexagon wrench)
3. Refill radiator with Toyota Super Long Life Coolant (premixed 50/50) or *(ethylene glycol based non-silicate, non-amine, non-nitrite, and non-borate coolant with long-life hybrid organic acid technology.)*
4. Squeeze upper radiator hose to remove air while filling.

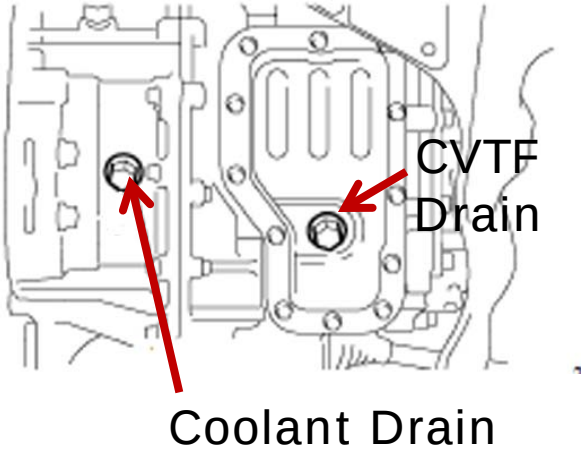
   (9qts total capacity)
5. Connect Scan Tool - Select Run Water Pump under Active Tests.

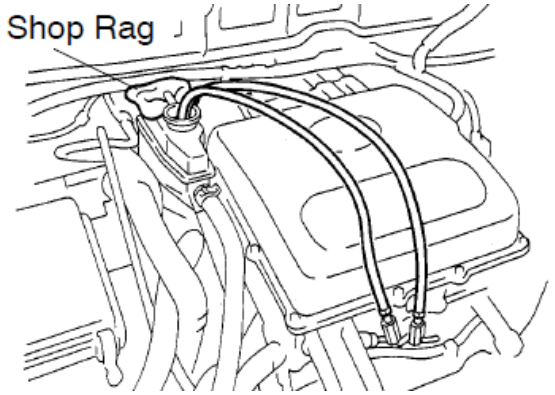
Prius Gen II
ICE Cooling System Service (cont.)

6. Tighten Radiator Bleeder.
7. Install Cap.
8. Enter Inspection Mode (Scan Tool Needed).
9. Run Engine until Upper Radiator Hose is HOT.
10. Remove Radiator Cap when Safe.
11. Fill to Level and Repeat Steps 8-10 until Level remains.
12. Turn Key Off.

Prius Gen I Transaxle/Inverter Coolant

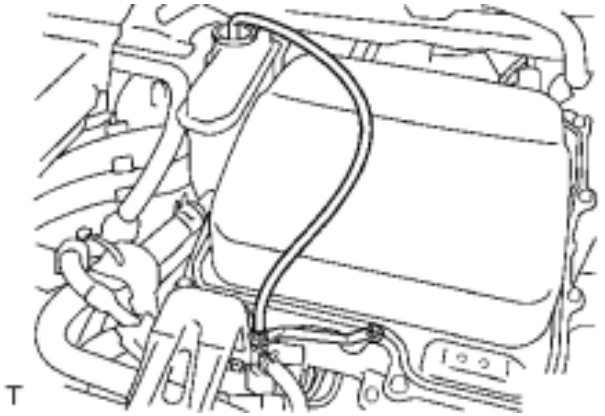
1. Remove Reservoir tank cap & drain plug.
2. Install drain plug w/new gasket.
3. Connect bleeder hoses & Open both bleeders.
4. Fill to level covering hoses until absent of bubbles.
5. Tighten both bleeder plugs.
6. Turn the ignition switch ON to active the HV water pump. (Scan Tool or Jump IG2 Relay in Junction Block?)
7. Run for 20 seconds.
8. Ignition OFF & Loosen bleeders.
9. Close bleeder s & Repeat.
10. Finished when Pump is quiet w/ good tank circulation.
11. Run pump for five (5) min.
12. Fill to level. (2.6qts of SLLC)

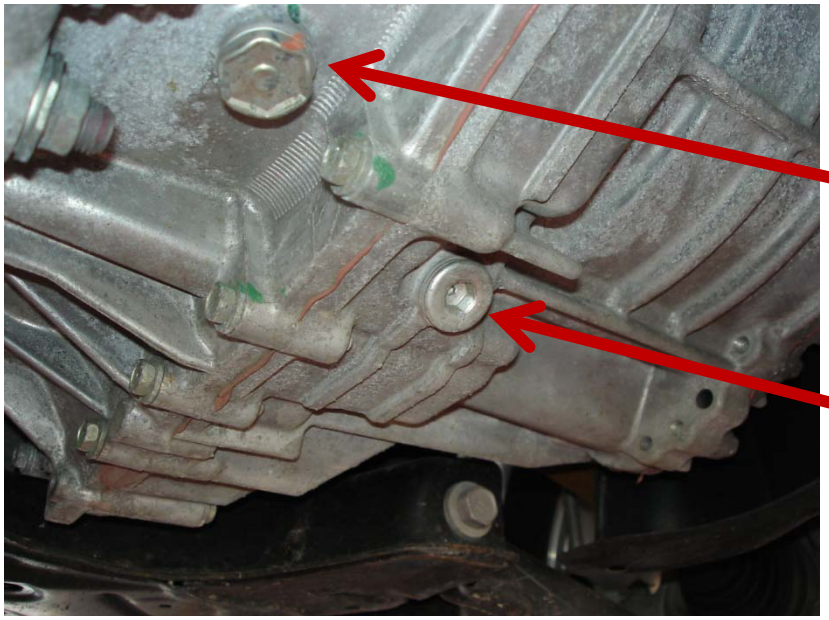




Prius Gen II Transaxle Coolant Service

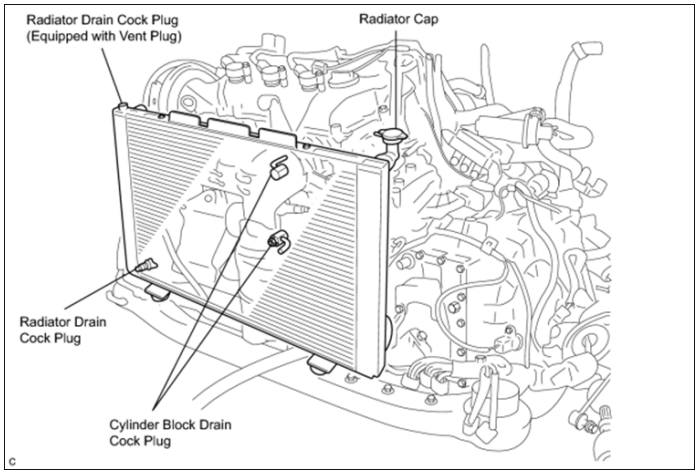
- Same As Gen I except:
  - Single bleeder





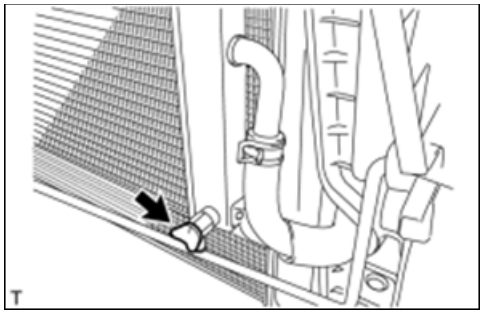
Highlander ICE Cooling System

- Similar to Prius.
- 10.9 qts. of Toyota SLLC.
- Inspection Mode:
  - Same as Gen I.
  - Use four (4) times WOT.
  - WOT two (2) times gets 2 WD Dyno Mode.

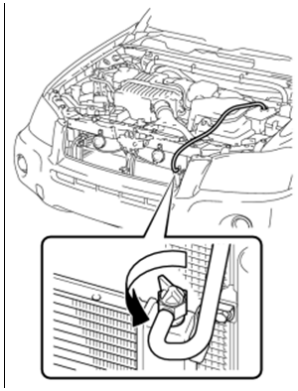


Highlander Transaxle Coolant Refill

1. Remove Transaxle Reserve Tank.
2. Loosen Front Lower LH Radiator Drain.
3. Close Drain Cock when done.
4. Open Drain Plug on bottom of Transaxle (Choose correct Drain).

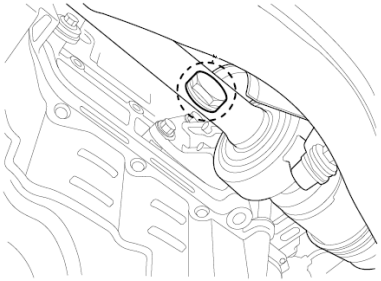


5. Re-install plug.
6. Remove Grill to loosen Bleeder plug (Front top LT of Radiator).
7. Connect hose to Reserve Tank & add until full (3.6qts) of SLLC.
8. Run Water Pump using Scan Tool or Turn Ignition to Ready-on.
9. Switch to Off – Add Coolant.
10. Repeat until Pump is Quiet & Reserve Tank Stays Full.



Honda Civic ICE Cooling System Service

- Draining
  1. Start engine –set heater temp control to max- turn ignition off.
  2. Remove splash shield & drain radiator.
  3. Remove drain plug – rear, center of block.
  4. Install plug and tighten radiator drain.
  5. Drain reservoir.



- Refilling
  1. Loosen bleeder on heater pipe joint by throttle body.
  2. Fill w/Honda LLA/C type 2 until coolant flows from bleeder. (5qts)
  3. Tighten bleeder.
  4. Fill reservoir.
  5. Run engine to bleed as normal.
- No HV Cooling System

Hybrid Auxiliary 12V Battery

Precautions

- Before disconnecting:
  - Ignition OFF.
  - Use power supply or record anti-theft codes.
  - Disconnect Negative first and replace last.

Honda Jump Start

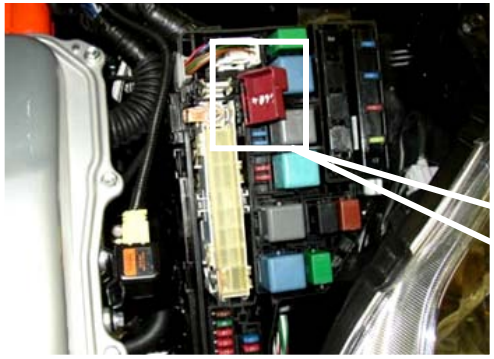
- Uses conventional starter.
- Jump Start using normal procedures.
- After a low or dead battery a “no start” may occur.
- Perform a battery reset.
  - Disconnect battery cables and jump together for 15 min.
  - Clear DTCs (may be “U” codes)

Honda 12V Battery Replacement

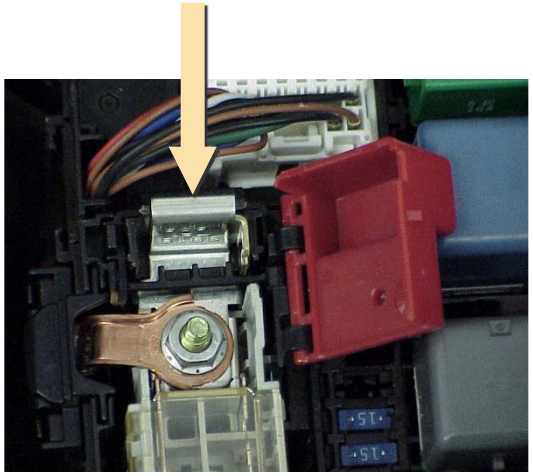
- On Initial Start:
  - Start Clutch Pressure Control Calibration.
    - Use HDS & follow on screen prompts.
    - Manual reset:
      1. W/engine @ normal temp, absent of MIL or blinking D indicator.
      2. IMA battery @ three (3) bars or more.
      3. Drive vehicle in “D” shifter position @ 37 MPH.
      4. Release accelerator w/o touching brakes for five (5) seconds.
      5. Test Drive for stalling or engine flairs – repeat steps 4 & 5 if necessary.
- To charge IMA (HV) battery:
  1. Vehicle in Park.
  2. Start engine.
  3. Run engine @ 3500- 4000 RPMs.
  4. Run until IMA battery level gauge (BAT) displays three segments.

Prius Gen II 12V Battery Jump Starting

Main Junction Block



Jumper Cable Tab



- Jump per normal procedures observing safety.
- Allow the vehicle's charging system to restore the battery to normal SOC.

Prius Gen I & II

- Absorbed Glass Mat 12V battery.
- Electrolyte trapped
- Low hydrogen gas release.
- **Do not use a standard Battery.**
- **Gases may be discharged into the Passenger Compartment!**

Toyota 12 V Battery Chargin

- Do not charge in vehicle.
- Follow standard battery replacement procedures.
- Use a Special Charger.
- Disconnect 12V battery for extended storage (1 week).
- Larger reserve capacities available to extend storage.

Model	Auxiliary Battery	Battery Charger
’01 – ‘03 Prius	AGM: S34B20L	Special “Smart” charger: 00002-YA122-01*
	AGM: S55D23L Optional battery - See TSB EL014-03	
’04 & later Prius	AGM: S34B20R	
	AGM: S46D24R (on vehicles w/smart key and/or Navigation)	
Highlander Hybrid	Lead-Acid: 55B24L	Standard ‘Fast’ chargers may also be used (Associated #ASE 6003 or Christie #CAPPDQ)

Ford Escape/Toyota Highlander Jump Starting

- Perform per normal safety procedures.
- Standard battery (does not start ICE).

Escape HV Battery Jump Starting

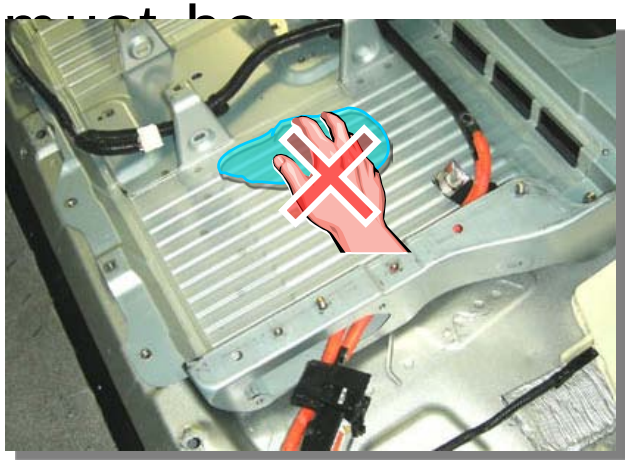
- Must have fully charged or jumper on 12V battery.
- Remove access cover on Driver's side kick panel.
- Push switch to start 8 min. timer.
- May need to repeat once.

Escape Inertia Switches

- HV Inertia Switch:
  - In RT rear jack storage compartment.
  - Disconnects HV only.
- Fuel Shut-Off Inertia Switch:
  - Located in RT side kick panel.
  - Shut off fuel and HV.

HV Battery Precautions

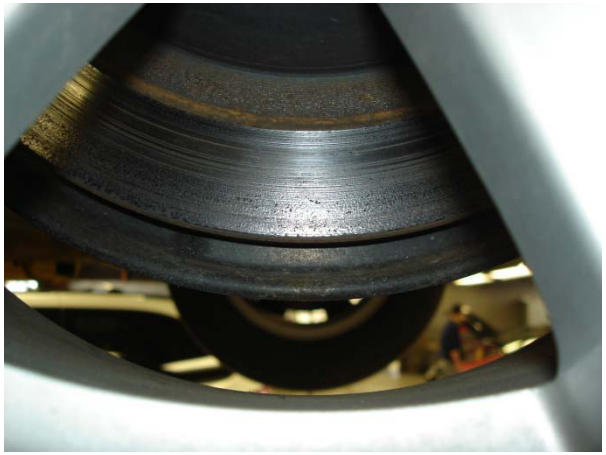
- Charging best done by vehicle.
- Toyota has Special Charger.
- **Toyota:**
  - **Do not touch Alkaline Electrolyte.**
  - **Gas exhaust tubes.**
- **Honda / Ford:**
  - Gel-type electrolyte (HV case must be damaged).
  - Mostly absorbed into plates.



Hybrid Foundation Brakes

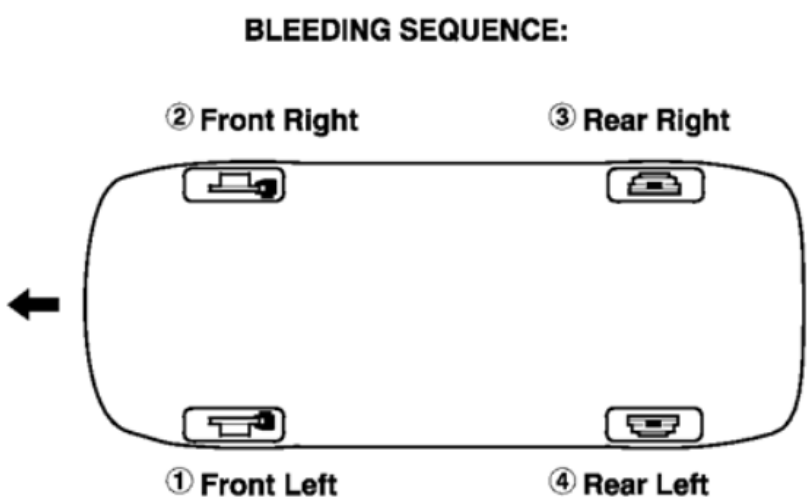
Honda Foundation Brakes

- Follow Conventional Replacement Procedures
- Honda Recommendation:
  - Use of an on-car, steering knuckle-mounted lathe is critical because it corrects run-out of the hub and disc as an assembly.



Honda Brake Bleeding

- Conventional Brakes (calipers, master cylinder, etc.)
  1. Ignition off
  2. Pump pedal until hard to release accumulator pressure
  3. Pump pedal and bleed traditionally (LF-RF-RR-LR)



Bleeding Procedures

- If the conventional brakes (i.e. ABS system, calipers, master cylinder) need to be bled, do this first.
- Bleed the brake system the traditional "pedal-pump" method and bleed the system at the wheels in a LF, RF, RR, LR fashion.
- Once the conventional brakes are bled, continue with the high pressure bleeding procedure.

High Pressure Bleeding Procedures

1. Attach a clear hose to the bleeder under the servo assembly
2. Open the bleed screw about 180 degrees
3. Turn the ignition to run and let the pump discharge brake fluid from the reservoir for one minute. Don't operate the pump for more than 110 seconds, or you can overheat it
4. Tighten the bleeder screw once no air is found discharging through the tube
5. Turn the ignition switch off

High Pressure Bleeding Procedures

6. Fill the fluid reservoir to the middle line
7. Turn the ignition switch to run
8. Make sure the brake lights in the IP cluster turn OFF
9. Turn the ignition switch off
10. Press the brake pedal 20 times or until the pedal becomes hard
11. Wait about 5 minutes
12. Repeat steps 6 - 11 two times

High Pressure Bleeding Procedures

13. Inspect the brake fluid level
14. Check the brake pedal stroke
15. Clear the DTCs if necessary

Ford Escape Brake Service

Brake Pad Service Mode

- The Regenerative Braking System checks the integrity of the brake system at times when the vehicle is parked.
  - Develops brake pressure for short periods of time.
  - Opening the door may trigger.
  - A must to enter the Pad Service Mode.
  - Prevents brake pressure from being applied.

Brake Pad Replacement

To enter Pad Service mode, perform the following:

1. Place the vehicle in Park. And turn the ignition to run.
2. Apply and hold the Brake Pedal.
3. Turn the ignition OFF and then ON three times with in three seconds. **Leaving ignition on with last cycle.**
4. Then release the brake pedal.
5. Brake warning lamp flashes while stored pressure is released.
6. On constant when on pressure is left.
7. Lamp will flash if the brakes are applied.

To exit Pad Service Mode:

1. W/brake pedal applied - turn ignition OFF then ON.
2. Pressure should develop .
3. Brake Lamp will go out.
4. To exit mode: Move gear shift or turn ignition OFF.

Exit Pad Service Mode

1. Apply the brake pedal
2. Turn the ignition OFF then ON. Pressure will be build in the system, then the brake lamp will shut off
3. Pad Service Mode will also terminated if:
   - Gear selector is moved from the Park position
   - Ignition turned OFF
   - Vehicle moves

Ford Escape Foundation Brake Bleeding

- Conventional “pedal pump” method or standard pressure bleeding.
- Bleeding Sequence: RR, LR, LF, RF
- High Performance DOT 3 Fluid.
- DO NOT ALLOW MC TO RUN LOW!!!!!!
- If replacing Hydraulic Control Unit(HCU) or MC.
  - System Bleed must be performed.

Ford Escape Brake System Necessary Bleeding Equipment

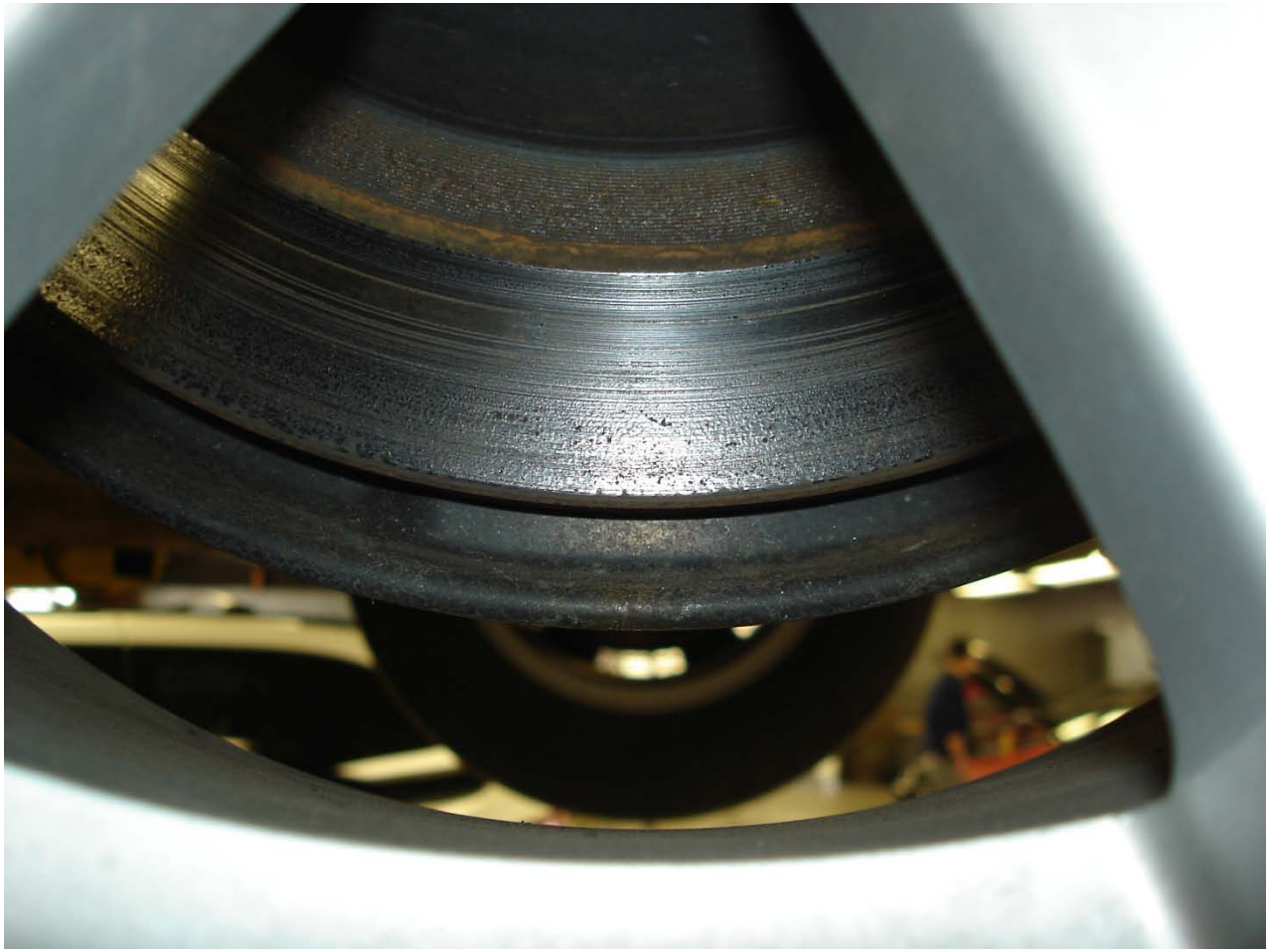
WDS
Worldwide Diagnostic System

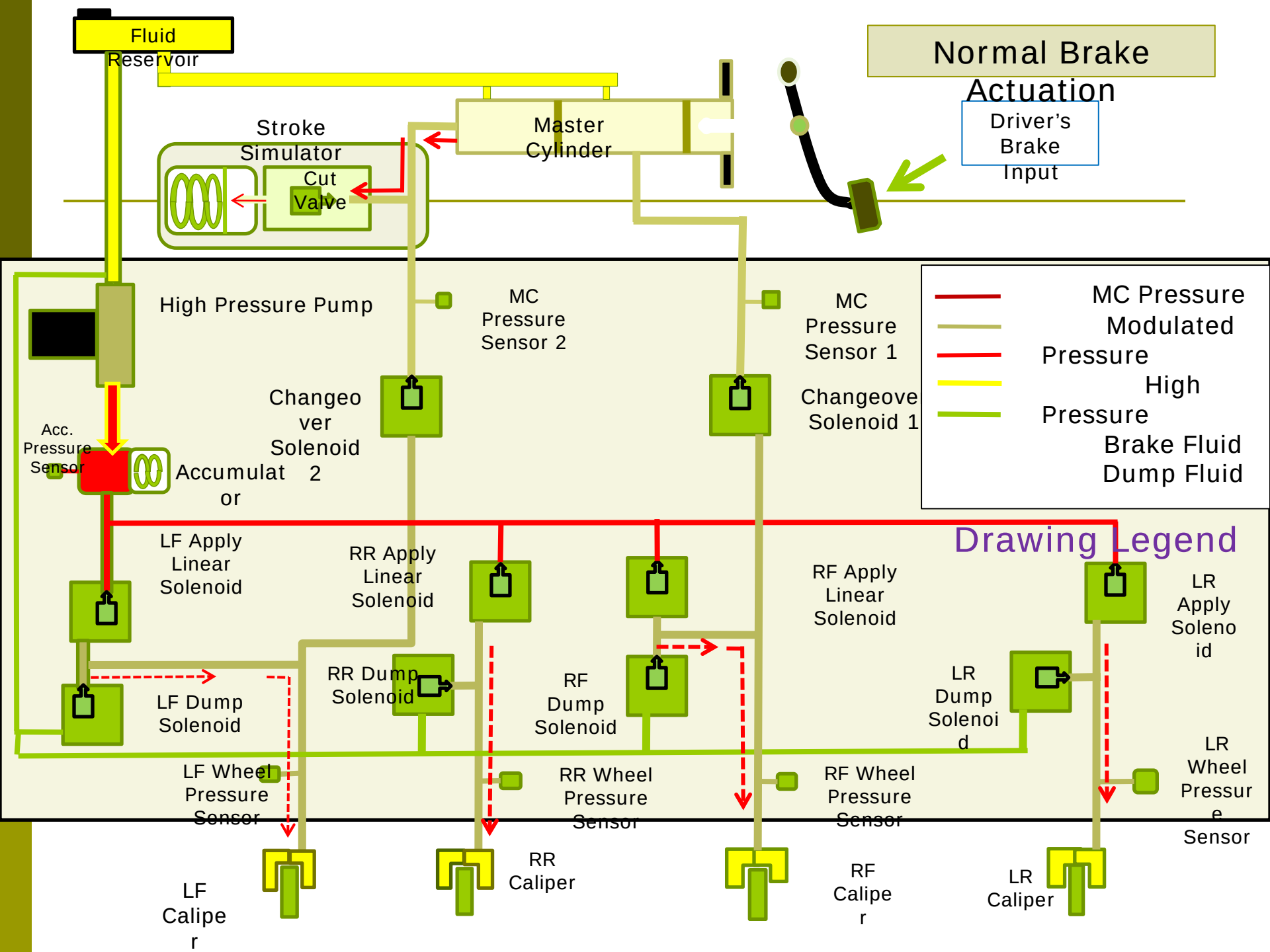
or

IDS/VCM
Integrated Diagnostic System
Vehicle Communication Module

VACULA
VAC18-8352 – DRAINTWIN BLEEDER FLUSHER

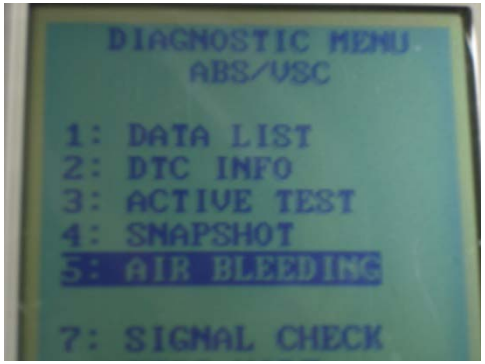
Toyota Hybrid Brake Service

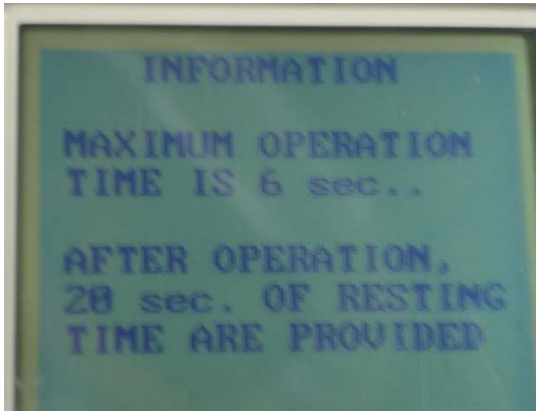


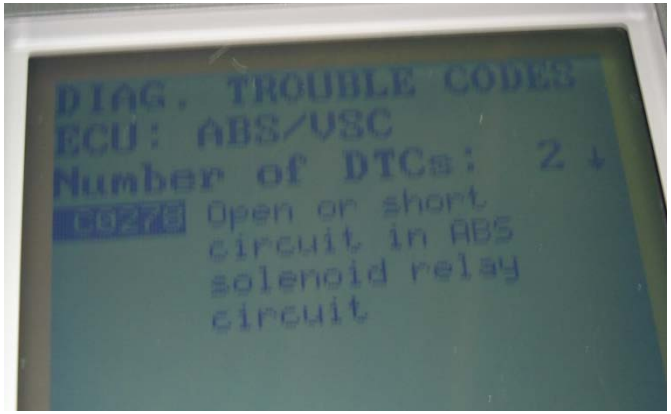

Normal Brake Actuation
Fluid Reservoir
Stroke Simulator
Cut Valve
Master Cylinder
Driver's Brake Input
High Pressure Pump
MC Pressure Sensor 2
MC Pressure Sensor 1
Changeover Solenoid 2
Changeover Solenoid 1
Acc. Pressure Sensor
Accumulator
MC Pressure
Modulated Pressure
High Pressure
Brake Fluid
Dump Fluid
Drawing Legend
LF Apply Linear Solenoid
RR Apply Linear Solenoid
RF Apply Linear Solenoid
LR Apply Solenoid
LF Dump Solenoid
RR Dump Solenoid
RF Dump Solenoid
LR Dump Solenoid
LF Wheel Pressure Sensor
RR Wheel Pressure Sensor
RF Wheel Pressure Sensor
LR Wheel Pressure Sensor
LF Caliper
RR Caliper
RF Caliper
LR Caliper

Prius Gen II Brake Bleeding

- Scan Tool (Techstream) Recommended.
- Front calipers may be carefully bled?
- Remove #1 & #2 motor relays







Prius Gen I Foundation Brake Bleeding

- With reservoir full release system pressure.
  1. Pump pedal 40 times with ignition off.
  2. Turn ignition on, pump should stop in 30-40 sec.
  3. With ignition off bleed system one side at a time.
  4. Pump pedal 20 times before opening bleeders each time.
  5. Depress pedal and drain fluid for only three (3) sec.
  6. Turn ignition on after each wheel.
  7. With pedal released, check to see if pump stops.
  8. Repeat seven 7 or more times.
  9. Scan tool may be needed to cycle SRRR solenoid.
  10. Pump Pedal 40 times and fill brake fluid to level.

Questions???

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- Presentation Location:
  - www. siucautomotive.com
  - http://opensiuc.lib.siu.edu/auto_pres/
- References:
  - Ford Motor Co.
  - American Honda Motor Co, Inc.
  - Toyota Motor Sales, Inc.