



Technical Bulletin

Division: Automotive
 Category: Technical

Section Title: Brakes
 TSB No. TS 03 02283

SUBJECT: CUSTOMER SATISFACTION CAMPAIGN: NX, Long Brake Pedal Travel
MODEL(S): FORENZA (RQ420) Equipped with ABS brakes.
YEAR: 2008
PRODUCTION RANGE: KL5JD56Z18K862550 ~ KL5JD56Z58K865886

CONDITION: Some customers may complain of long brake pedal travel and/or reduced brake performance.

CAUSE: The change in brake pedal response is due to corrosion of the zinc plating on the ABS Hydraulic Modulator valve armature. This corrosion may lead to a gel build-up on the sides of the valve, which may affect the closing motion of the valve. There will be no loss of brake fluid, no external leaking and no reduction in brake fluid level.

CORRECTION: Suzuki dealers will test the ABS Hydraulic Modulator, and **if it tests faulty**, replace it. Also, Suzuki dealers are **required** to replace the brake system fluid with only Suzuki approved part number 990B0-99900-PKG brake fluid **regardless** of ABS Hydraulic Modulator condition.

NOTICE

Using brake fluid other than Suzuki approved brake fluid can cause damage and/or improper operation of this ABS Hydraulic Module.

Only use SUZUKI approved part number 990B0-99900-PKG brake fluid when completing this campaign.

Technical Service Department
 Dealership Circulation – Initial and file:

Service Manager	Parts Manager	Service Advisor	Technicians					

Suzuki bulletins are intended for use by professional technicians, NOT a “do-it-yourselfer.” They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your authorized Suzuki dealer for information on whether your vehicle may benefit from the information. Suzuki reserves the right to change technical specifications at any time without prior notice.

Model: Forenza	Section: Brakes	TSB No. TS 03 02283
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PART(S) INFORMATION			
Description	Part Number	Qty.	Notes
Brake Fluid	990B0-99900-PKG	3	<u>Suzuki Approved Brake Fluid</u> This part number, developed for purposes of this campaign, represents a pre-packaging of the 3 bottles of fluid required for this campaign. However each bottle must be ordered individually. Ordering Qty 3 will result in delivery of one package containing 3 bottles of fluid.
Coolant	99963-01501-512	---	Dealer supplied shop materials. Use this part number for warranty claim. (Undiluted Coolant is Required)
HCU-ABS	56100-85Z20	1	ABS Hydraulic Module Order release by ASMC Techline – Requires SR#. ASMC Techline – (800) 934-1616.

WARRANTY INFORMATION				
Campaign Code	Operation Code	Complaint Code	Defect Code	Labor Time
Please refer to the Service Campaign Bulletin SC-65 for claim submission instructions and labor times.				

BULLETIN LAYOUT

This bulletin is comprised of four sections:

- SECTION “A” - ABS Hydraulic Modulator Inspection
- SECTION “B” - Brake Valve Cycling
- SECTION “C” - ABS Hydraulic Modulator Replacement
- SECTION “D” - Brake System Bleed Procedure

Section “A” - page 4, (ABS Hydraulic Modulator Inspection)

Will be your beginning point and will be completed for every vehicle. This section tests the condition of the ABS Hydraulic Modulator valves. Depending on the condition of the valves (pass or fail) sections “B” and “C” may or may not be necessary.

Section “B” - page 11, (Brake Valve Cycling)

Will be completed when all the ABS Hydraulic Modulator valves **pass the inspection** in section “A”. **In this case the ABS Hydraulic Modulator is not required to be replaced.** However Brake Valve Cycling is necessary to cycle the old brake fluid from the existing modulator. **Section “C” will not be necessary in this case.**

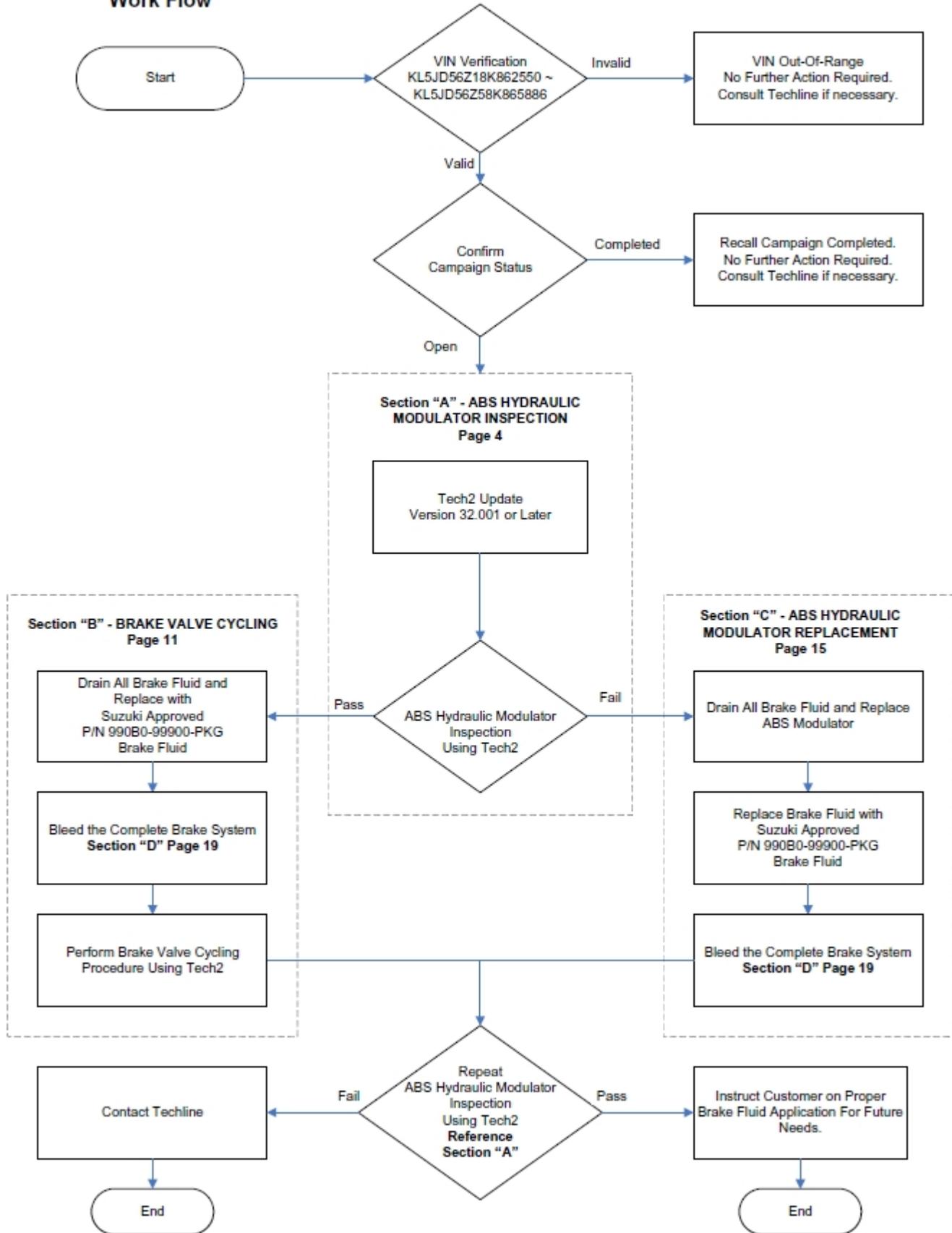
Section “C” - page 15, (ABS Hydraulic Modulator Replacement)

Will be completed when any of the ABS Hydraulic Modulator valves **fail the inspection** in section “A”. **In this case the ABS Hydraulic Modulator will be replaced.** The new modulator will come pre-filled with the required brake fluid, therefore the brake cycling procedure is not needed. **Section “B” will not be necessary in this case.**

Section “D” - page 19, (Brake System Bleed Procedure)

Section “D” contains the brake bleeding procedure for reference when called out in this bulletin.

Work Flow



SERVICE PROCEDURE**BEGIN SECTION "A" - ABS Hydraulic Modulator Inspection**

Section "A" will be your beginning point and will be completed for every vehicle. This section tests the condition of the ABS Hydraulic Modulator valves. Depending on the condition of the valves (pass or fail) sections "B" and "C" may or may not be necessary.

NOTE:

*It will be necessary to use your **Tech2 with a 32MB card updated with software version 32.001** or later for this campaign. Update your Tech2 through TIS2WEB if necessary. (Contact the Suzuki Automotive Tech Line ((800)934-1616) if needed for TIS2WEB Download Assistance.)*

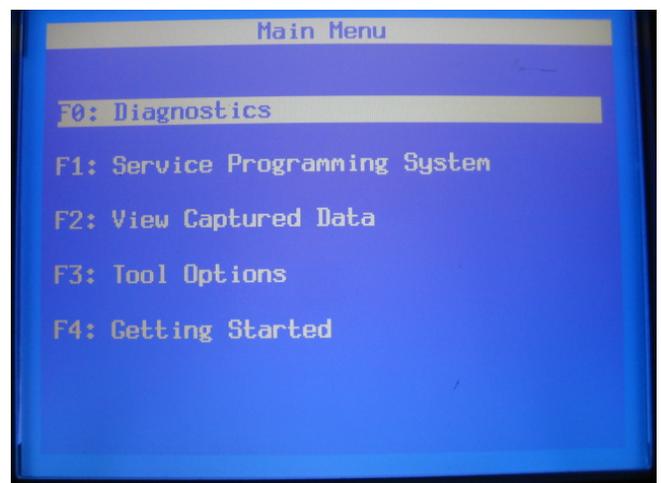
NOTE:

During the ABS Hydraulic Modulator Inspection, battery discharge may occur. It is recommended to connect a secondary power supply to the battery.

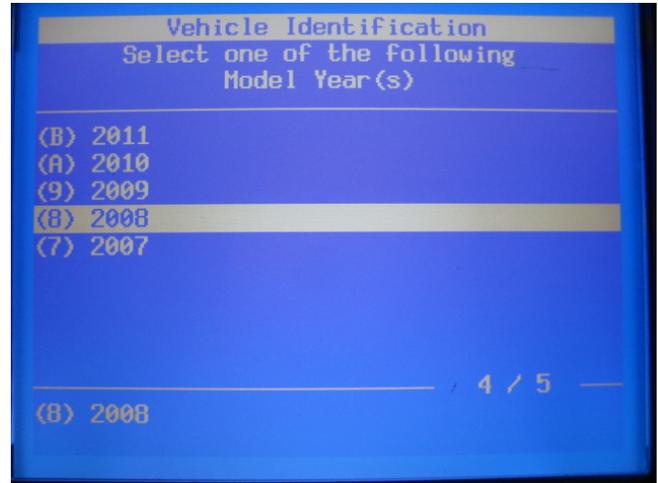
1. Connect the updated Tech2 (Version 32.001 or Later) to the vehicle Data Link Connector (DLC) and turn the power on. **Select ENTER** to proceed to the Main Menu screen.



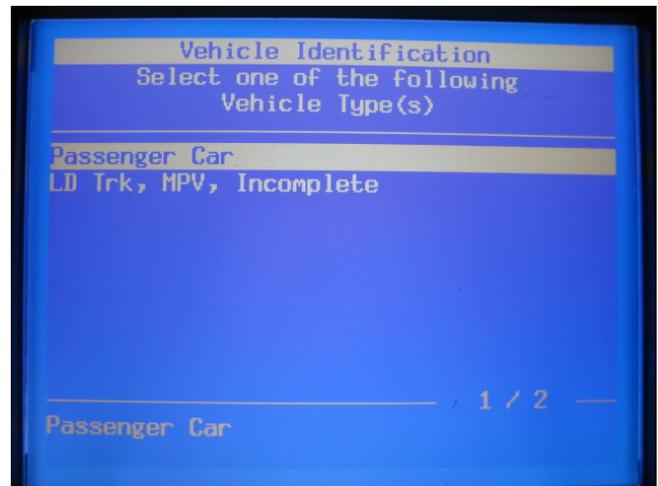
2. **Select function F0: Diagnostics**, to proceed to the Vehicle Identification screens.



3. **Select model year** for the vehicle being worked on.



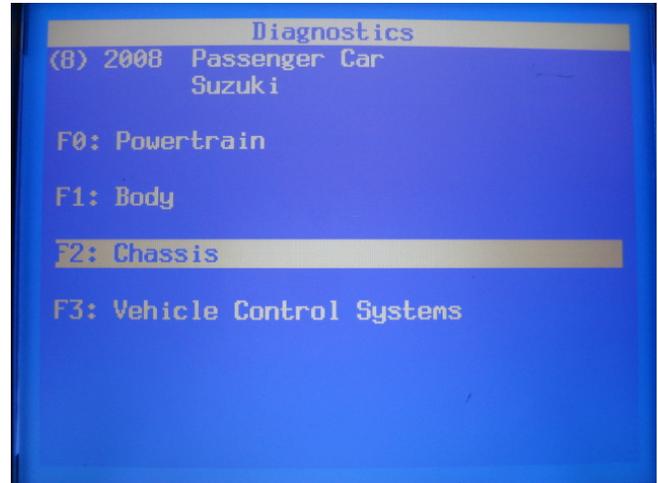
4. **Select Passenger Car.**



5. **Select model code J** to proceed to the Diagnostics screen.



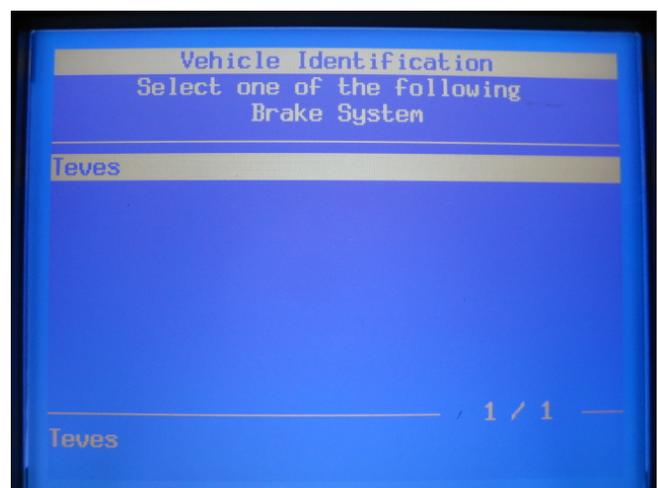
6. **Select Chassis** to proceed to the CAUTION screen.



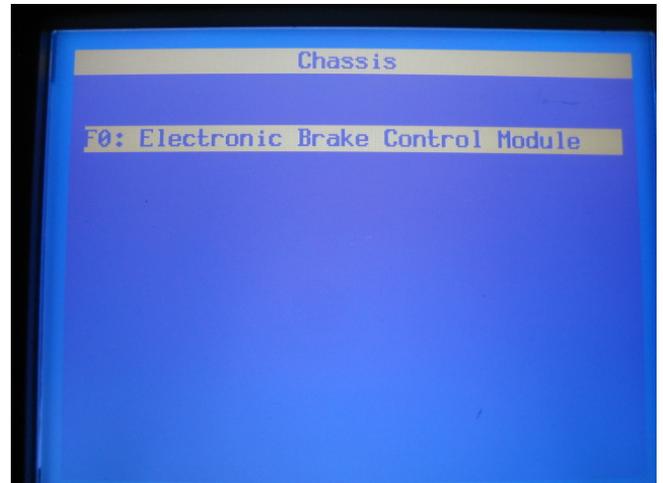
7. If the ABS or TCS warning lamps are illuminated on the instrument cluster, the ABS module will not be available for testing. Correct the cause before continuing with this bulletin. If the lamps are not illuminated, **Select Continue** to proceed to additional Vehicle Identification.



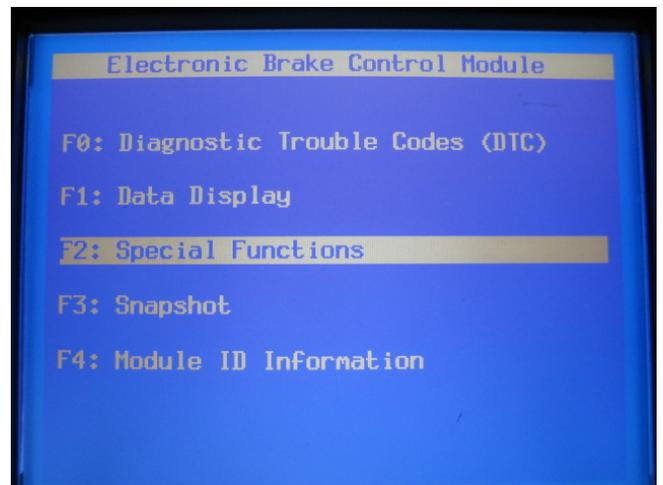
8. **Select Teves** to proceed to the Chassis screen.



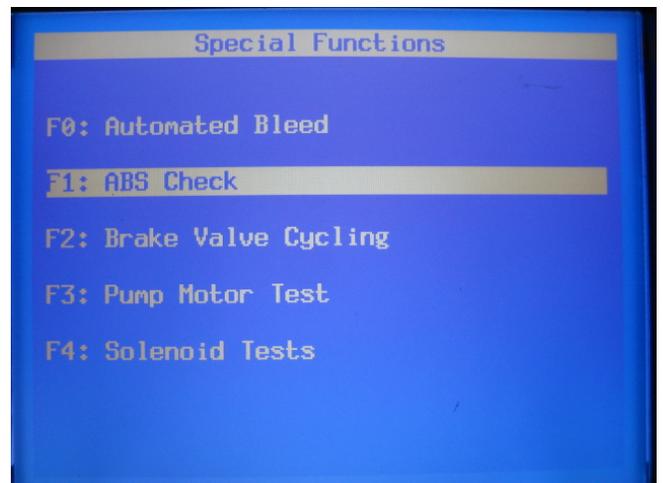
9. **Select function F0: Electronic Brake Control Module** to proceed to the Electronic Brake Control Module screen.



10. **Select function F2: Special Functions**, to proceed to the Special Functions screen.



11. **Select function F1: ABS Check** to proceed to the ABS Check screen.

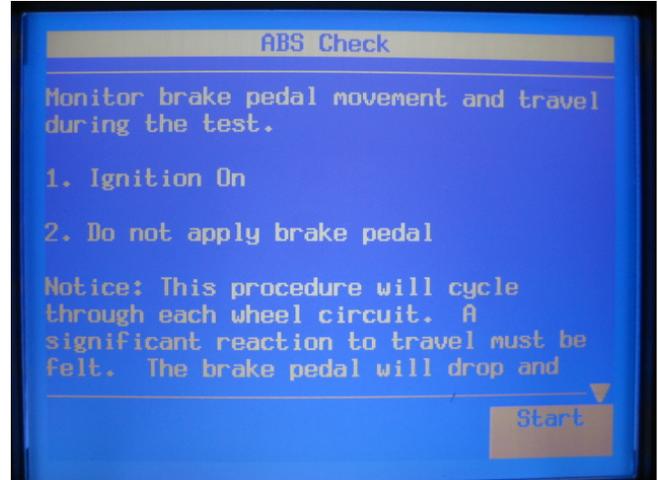


12. Start the ABS Hydraulic Modulator Valve Check procedure.

- a. Follow the instructions on the Tech2 screen. Press "Start" to begin.

NOTE:

When following instructions on the Tech2 screen, use the "Page Down" or "Down Arrow" to access all instructions.



13. Wait for the Tech2 to communicate and receive data.

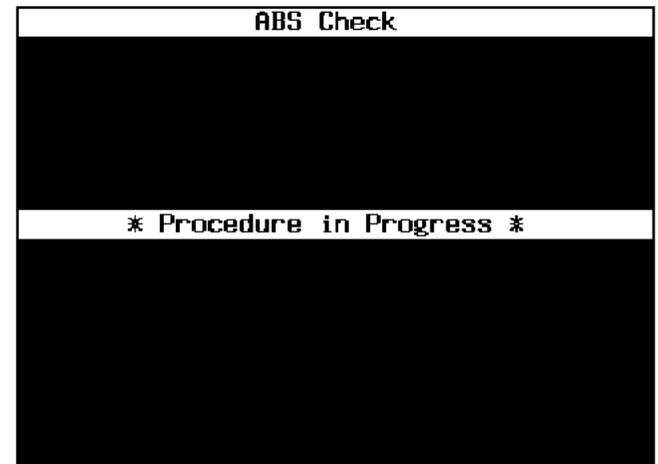
NOTE:

To fully complete this ABS Hydraulic Modulator Inspection procedure, steps 14 through 18 will repeat for each wheel circuit in order; Left Front, Right Front, Left Rear then Right Rear.



14. Procedure in Progress.

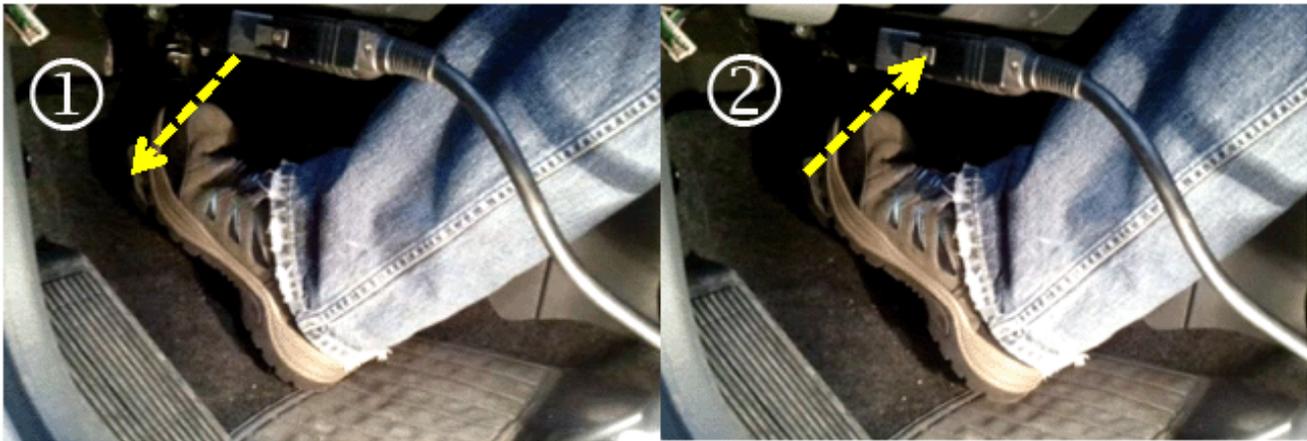
- a. The ABS pump motor should run for one second while the "Procedure in Progress" screen is displayed.



15. When instructed by the Tech2 screen, apply and Hold the Brake Pedal firmly.
- Apply and hold the brake pedal firmly during this check.
 - At this time you should feel the pedal drop at least $\frac{1}{4}$ inch when the valve opens, and should feel pedal push back returning the pedal to its beginning position as the motor pressurizes the system.

ABS Check

Apply and hold Brake Pedal.
Monitor brake pedal reaction.



16. Was the brake pedal “drop” at least $\frac{1}{4}$ inch?
- If you decide brake pedal drop was **NOT at least $\frac{1}{4}$ inch**, select “No”. The screen will renew and display “Procedure Failed”. If any of the wheel circuit tests fail, you will have to **replace the ABS Hydraulic Modulator (Go to SECTION “C” - ABS Hydraulic Modulator Replacement in this bulletin (page 15))**. Press “EXIT” to continue.
 - If the answer was yes, select “Yes” and proceed to the next step.

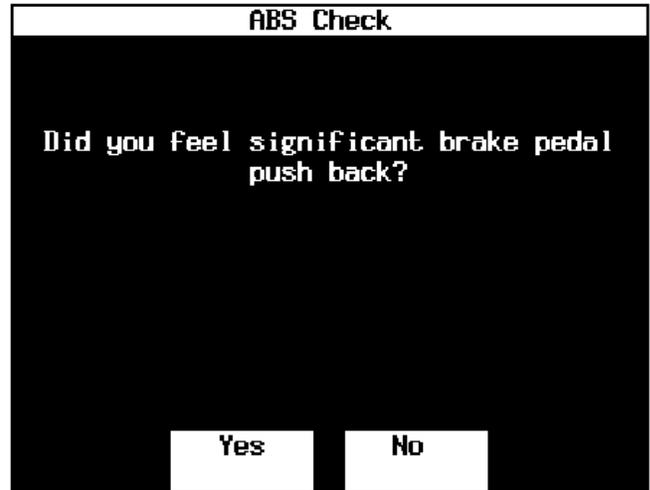
ABS Check

Did you feel significant brake pedal travel (drop)?

Yes

No

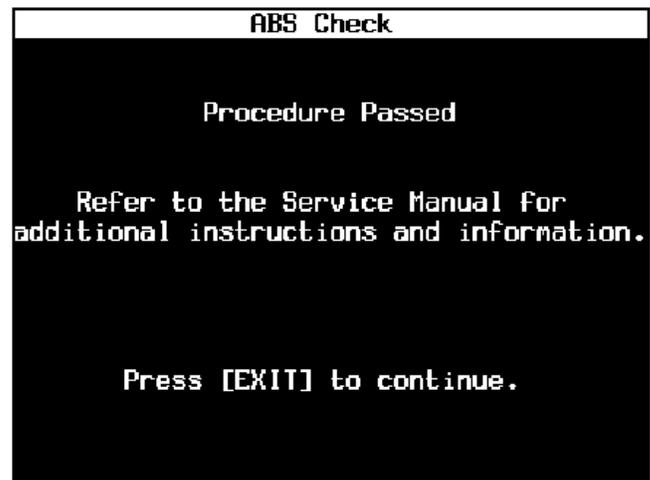
17. Did the pedal raise back to its original position?
- If you decide brake pedal push back did not bring the pedal back to its original position, select "No". The screen will renew and display "Procedure Failed". If any of the wheel circuit tests fail, you will have to **replace the ABS Hydraulic Modulator (Go to SECTION "C" - ABS Hydraulic Modulator Replacement in this bulletin (page 15)).** Press "EXIT" to continue.
 - If the answer was yes, select "Yes" and proceed to the next step.



18. The ABS Check Screen will instruct you to release the pedal.
- If there are remaining wheel circuits to be checked (right front, left rear, or right rear), the procedure will return to step 14. If all circuits have been checked and pass the inspection, proceed to the next step.



19. If all the wheel circuits (left front, right front, left rear, and right rear) have passed the check, the ABS Hydraulic Modulator is good. Continue to the Brake Valve Cycling section of this bulletin (**SECTION "B" beginning on page 11**) to complete this recall.
- Select "EXIT" to continue.



SECTION "A" PASS – PROCEED TO SECTION "B".
SECTION "A" FAIL – PROCEED TO SECTION "C".
END OF SECTION "A"

- ABS Hydraulic Modulator Inspection

BEGIN SECTION “B”- Brake Valve Cycling

Section “B” will be completed when all the ABS Hydraulic Modulator valves pass the inspection in section “A”. In this case the hydraulic modulator is not required to be replaced. However brake valve cycling is necessary to cycle the old brake fluid from the existing modulator. Section “C” will not be necessary in this case.

▲ WARNING

Brake fluid may irritate eyes and skin.

In case of contact, take the following actions:

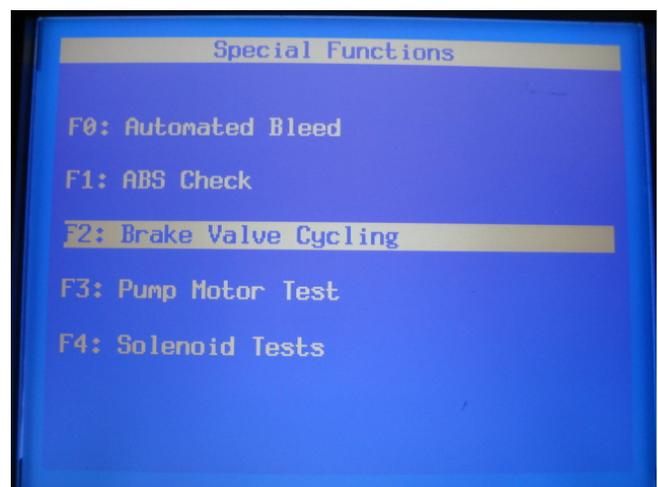
- Eye contact: rinse thoroughly with water.
- Skin contact: wash with soap and water.
- If ingested: consult a physician immediately.

NOTE:

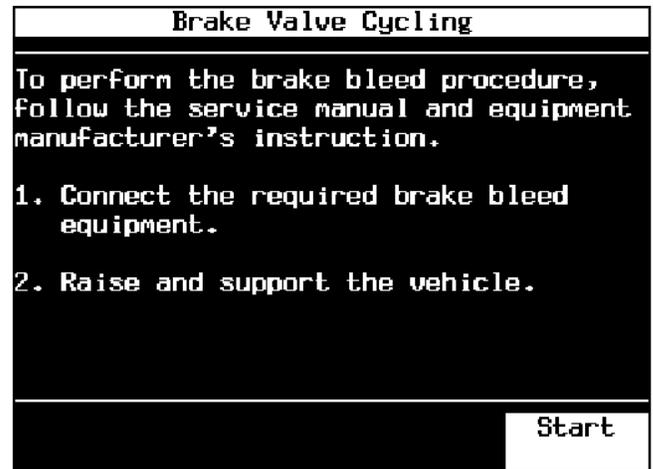
During the brake valve cycling procedure, battery discharge may occur. It is recommended to connect a secondary power supply to the battery.

1. Raise and support vehicle.
2. Remove all wheels.
3. **Drain all existing brake fluid from the brake system (including the master cylinder reservoir).**
4. Fill the brake system with only Suzuki approved brake fluid, part number 990B0-99900-PKG, and bleed the complete brake system. **See Section “D”, page 19 for brake bleeding procedure. (DO NOT perform Automated Bleed through Tech2).**

5. Connect the updated Tech2 (Version 32.001 or Later) to the vehicle Data Link Connector (DLC) and follow steps 1 through 10 of Section A in this bulletin to proceed to the Special Functions screen. Select function F2: Brake Valve Cycling to begin the brake valve cycling procedure.



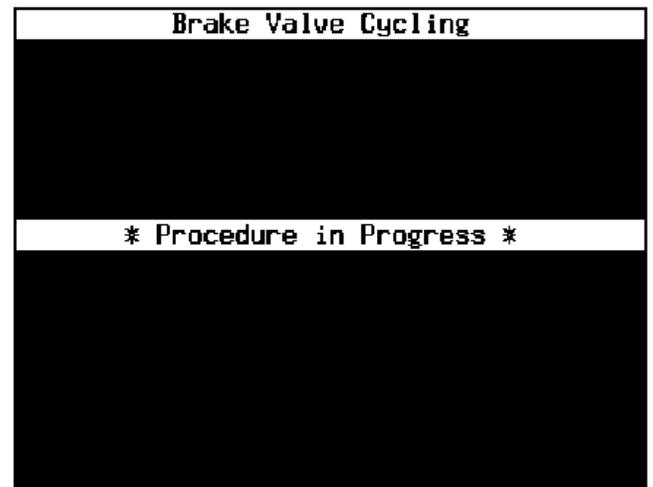
6. Start brake valve cycling.
 - a. Select start.



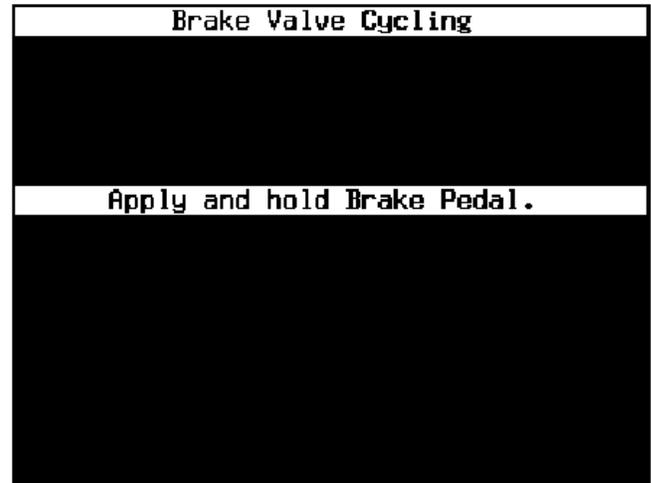
7. Wait for data.
 - a. Wait for the Tech2 to communicate and receive data.



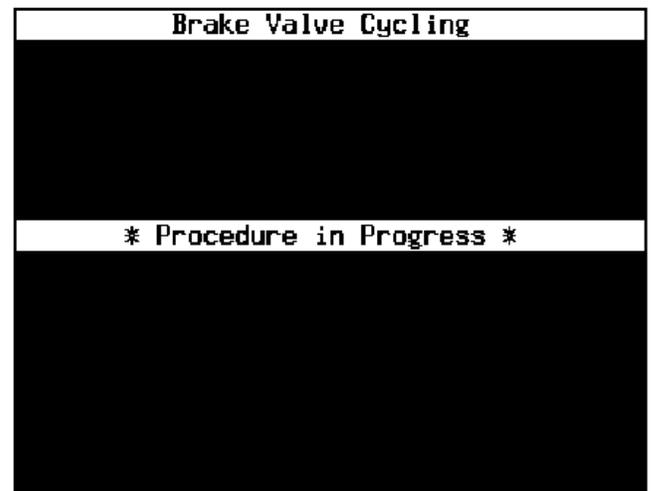
8. Procedure in Progress
 - a. Wait for the screen to refresh and direct you to apply and hold brake pedal.



- 9. When instructed by the Tech2 screen, apply and Hold the Brake Pedal firmly.



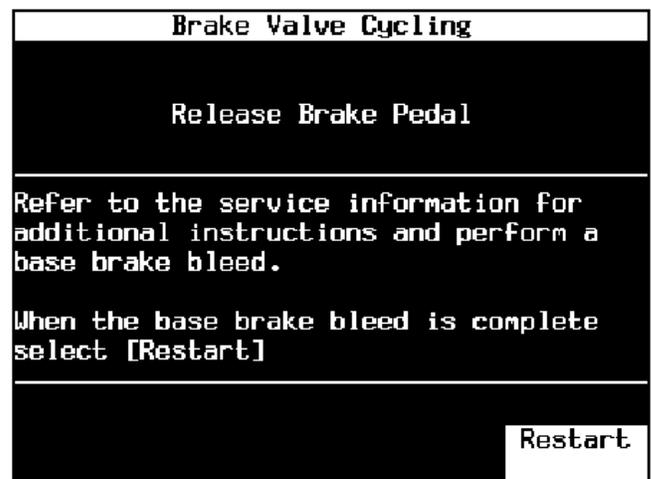
- 10. Procedure in Progress
 - a. The automatic brake valve cycling process will run for 25 seconds. Pedal down/up motion will occur during the process.



- 11. Release the brake pedal when directed.
 - a. Release the brake pedal and perform a brake bleed on only the front wheel circuits.

NOTE:
Perform brake bleed for only the front wheel circuits (open each front caliper bleeder valve 1 time for 1-2 seconds and close. This will only extract a very small quantity of brake fluid from each front caliper).

- b. Select restart when brake bleed is completed for the front wheels only. Restart will repeat steps 10 through 11 automatically for a total of 10 cycles and then stop.



12. Procedure is completed.
- After the 10th cycle, the Tech2 will request to "EXIT".



13. Perform the ABS Hydraulic Modulator Inspection (Section "A") once again to confirm the module is operating correctly.

NOTE:

This step is only to confirm the module is operating correctly. If the test passes all 4 cycles, no further action is needed. If any of the four cycles fail, please contact Tech Line for direction at (800)934-1616.

14. Confirm Section "D" – Brake System Bleeding Procedure, has been completed prior to campaign completion and label installation.
15. This recall campaign is complete. Apply the proper campaign label to the upper radiator support in an area where it will be easily seen and identified, and write your dealer code in the white portion of the label. Perform a road test to confirm proper brake operation and return the vehicle to the owner.



NOTE:

Section "D", Brake System Bleeding Procedure, should have been completed at the beginning of Section "B" (step 4). If not, perform Section "B" again.

END OF SECTION "B"

- Brake Valve Cycling

BEGIN SECTION "C" ABS Hydraulic Modulator Replacement

Section "C" will be completed when any of the ABS Hydraulic Modulator valves fail the inspection in section "A". In this case the ABS Hydraulic Modulator will be replaced. The new modulator will come with the required brake fluid, therefore the brake cycling procedure is not needed. Section "B" will not be necessary in this case.

▲ WARNING

Brake fluid may irritate eyes and skin.

In case of contact, take the following actions:

- Eye contact: rinse thoroughly with water.
- Skin contact: wash with soap and water.
- If ingested: consult a physician immediately.

▲ WARNING

Engine coolant can burn you when hot.

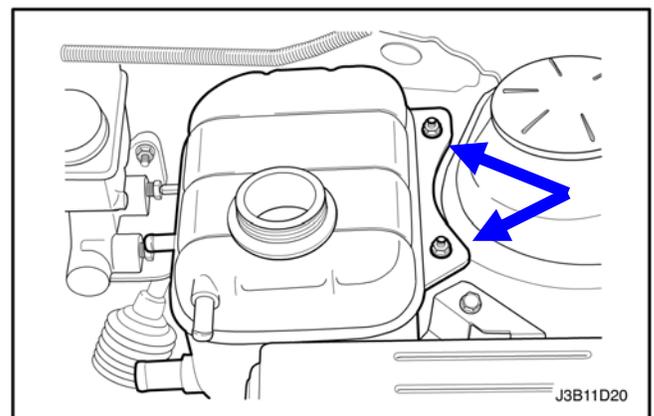
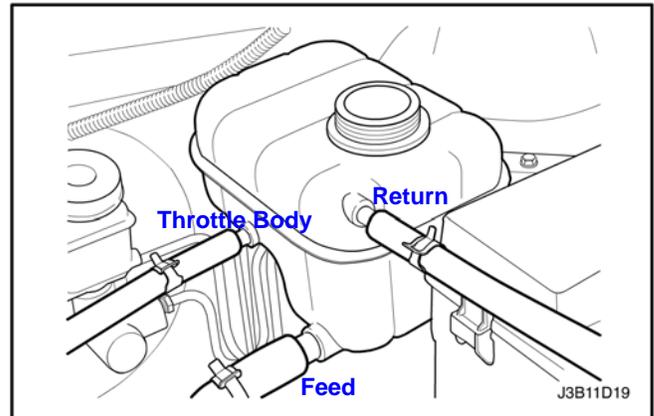
To prevent personal injury, do not attempt to remove the surge tank cap or hoses while the engine and the radiator are hot, as hot fluid and steam may be blown out when under pressure.

NOTE:

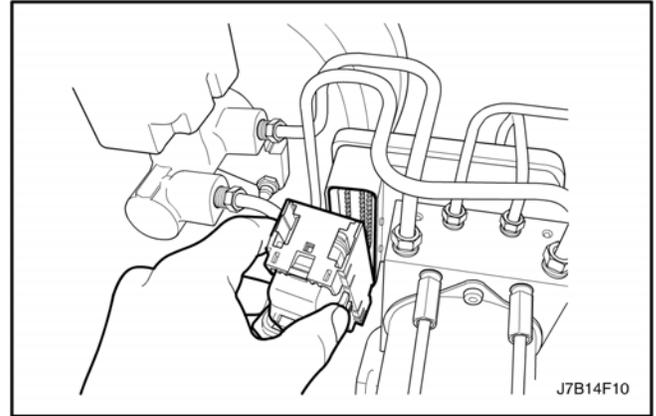
Contact ASMC Techline ((800) 934-1616) and request release of 1 ABS Hydraulic Modulator part number 56100-85Z20. An SR file will be opened and the part will be sent for overnight delivery.

Removal Procedure

1. Turn the ignition switch to the OFF position.
2. **Drain all the brake fluid from the complete brake system.**
3. Drain the engine coolant to below the level of the surge tank.
4. Loosen the return hose clamp and disconnect the return hose from the top of the surge tank.
5. Loosen the throttle body hose clamp and disconnect the throttle body hose from the surge tank.
6. Loosen the feed hose clamp and disconnect the feed hose from the bottom of the surge tank.
7. Remove the surge tank attaching bolts.
8. Remove the surge tank.



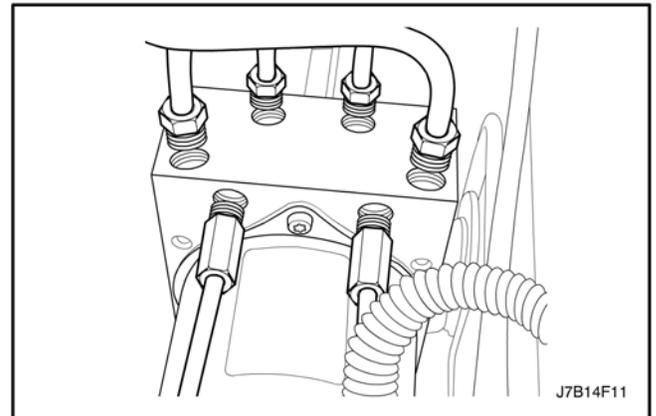
9. Clean the ABS modulator assembly pipe fitting areas of any accumulated dirt and foreign material.
10. Disconnect the electrical connector from the electronic brake control module (EBCM).



11. Place shop towels under the ABS modulator assembly to catch any brake fluid loss. **Be sure to protect the electrical connector and socket from any contact with brake fluid. Always use fender covers or adequate covers and protection over the vehicle fenders to protect the paint finish.**

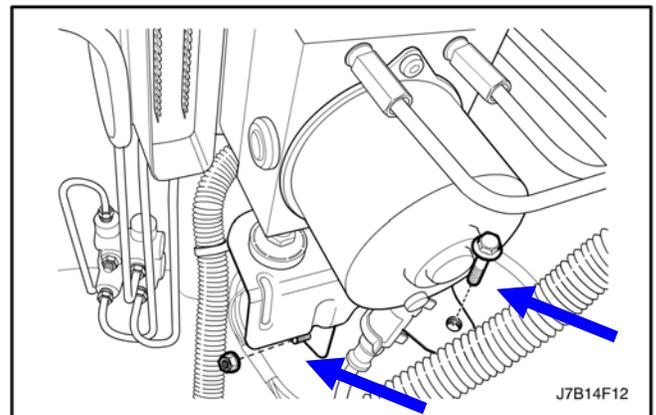
NOTE:

Prior to disconnecting the brake pipes from the ABS Hydraulic Modulator assembly, note the locations of the brake pipes to the valve assembly, to aid during installation.

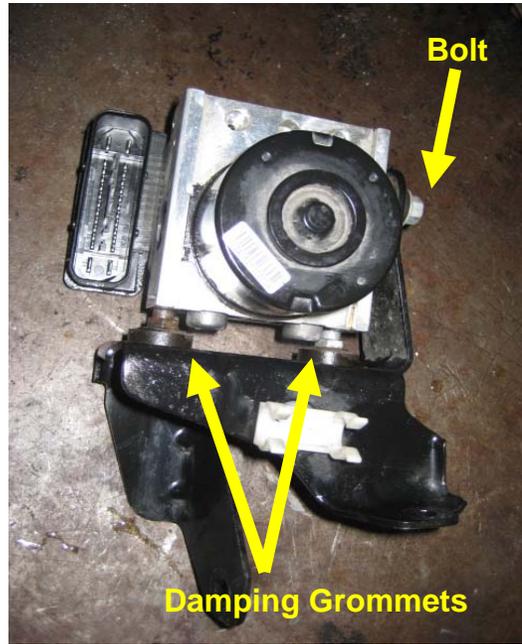


12. Disconnect the brake pipe fitting nuts from the ABS Hydraulic Modulator.
13. Cap the brake pipe ends to prevent contamination.
14. Plug the ABS Hydraulic Modulator brake pipe openings to prevent brake fluid loss and contamination.

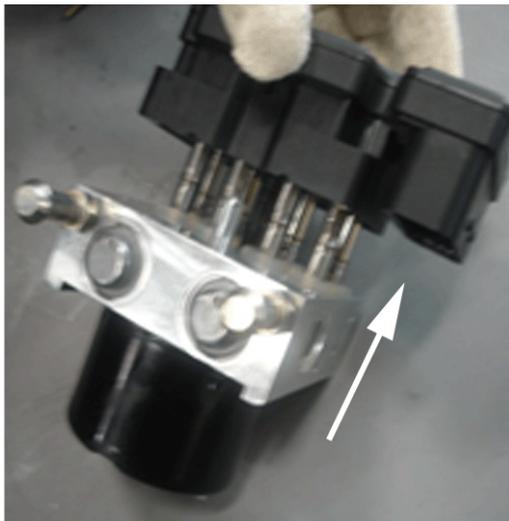
15. Remove the mounting bracket fasteners from the vehicle body panel and remove the ABS module from the vehicle.



16. Remove the ABS modulator assembly bracket bolt, then remove the ABS module from the bracket by sliding it out from the two damping grommets.



17. Remove the two mounting pins (#1) from the ABS Hydraulic Modulator.
18. Remove the three fasteners (#2) holding the EBCM to the hydraulic module.
19. Slide the EBCM from the hydraulic module.



Install the new ABS Hydraulic Module in reverse order.

1. Slide the EBCM onto the ABS Hydraulic Module and tighten the three fasteners.
 - a. (Torque 1.8 Nm (16 lb-in))
2. Install the two mounting pins to the ABS Hydraulic Modulator.
 - a. (Torque 8 Nm (6 lb-ft))
3. Install the ABS modulator assembly to the modulator bracket by seating the pins into the dampers and installing the single bracket bolt.
 - a. (Torque 11 Nm (8 lb-ft))
4. Install the ABS modulator assembly with the mounting bracket attached to the vehicle's body panel.
 - a. (Torque 22 Nm (16 lb-ft))
5. Remove the caps from the brake pipe ends.
6. Remove the plugs from the brake pipe ports on the ABS Hydraulic Modulator assembly.
7. Connect the brake pipes to the ABS Hydraulic Modulator in the same positions noted when removed. Tighten each brake pipe fitting.
 - a. (Torque 16 Nm (12 lb-ft))
8. Connect the electrical connector to the EBCM.
9. Install the engine coolant reservoir tank.
10. Fill the coolant reservoir and adjust the cooling system fluid level.
11. Fill the brake system with only Suzuki approved brake fluid, part number 990B0-99900-PKG brake fluid.
12. Perform brake bleeding procedure to the complete brake system. **See Section "D" page 19.**
13. **Perform the ABS Hydraulic Module Inspection once again to confirm the module is operating correctly.**

NOTE:

This step is only to confirm the module is operating correctly. If the test passed all 4 cycles, no further action is needed. If any of the four cycles fail, please contact Tech Line for direction at (800)934-1616.

14. **Confirm Section "D" – Brake System Bleeding Procedure, has been completed prior to campaign completion and label installation.**
15. This recall campaign is complete. Apply the proper campaign label to the upper radiator support in an area where it will be easily seen and identified, and write your dealer code in the white portion of the label. Perform a road test to confirm proper brake operation and return the vehicle to the owner.



END OF SECTION "C"
- ASB Modulator Replacement

BEGIN SECTION "D" - Brake System Bleed Procedure

Section "D" contains the brake bleeding procedure for reference when called out in this bulletin.

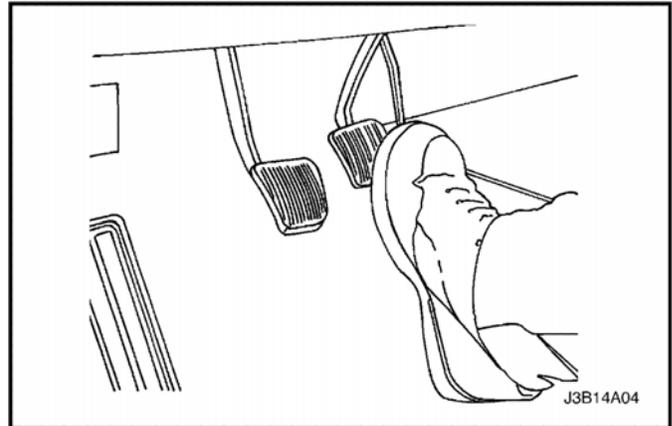
NOTE:

This section assumes that the brake system has been drained of all old brake fluid.

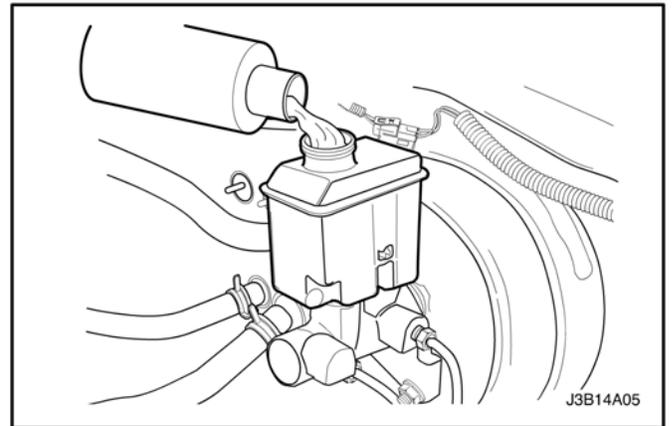
Manual Bleeding**NOTE:**

Be sure that all brake bleed equipment has been drained, cleaned and flushed and refilled with only Suzuki approved part number 990B0-99900-PKG brake fluid,.

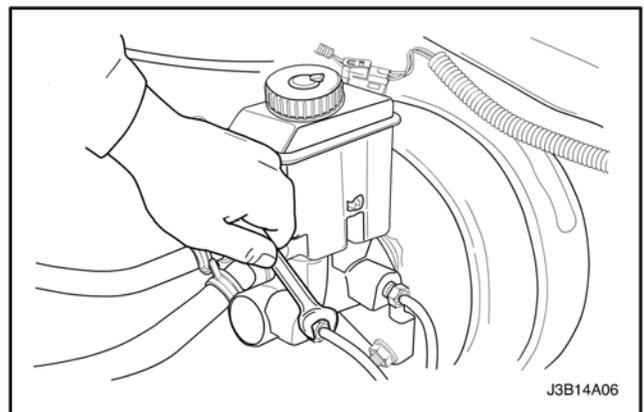
1. Remove the booster vacuum reserve by applying the brakes several times with the engine OFF until the brake pedal becomes hard.



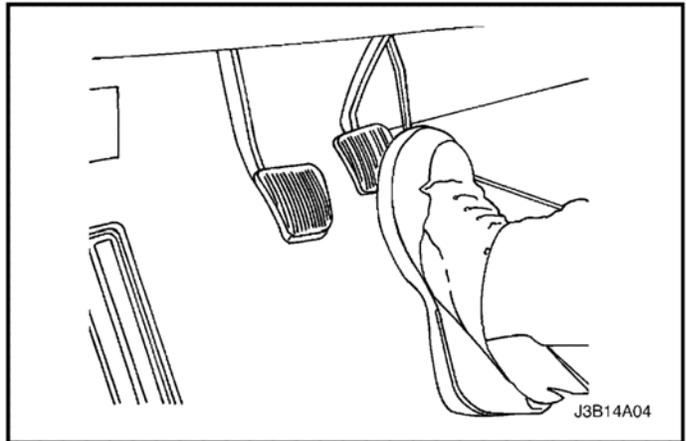
2. Fill the master cylinder reservoir with Suzuki approved part number 990B0-99900-PKG brake fluid. Keep the master cylinder at least one-half full of fluid during the bleeding operation.



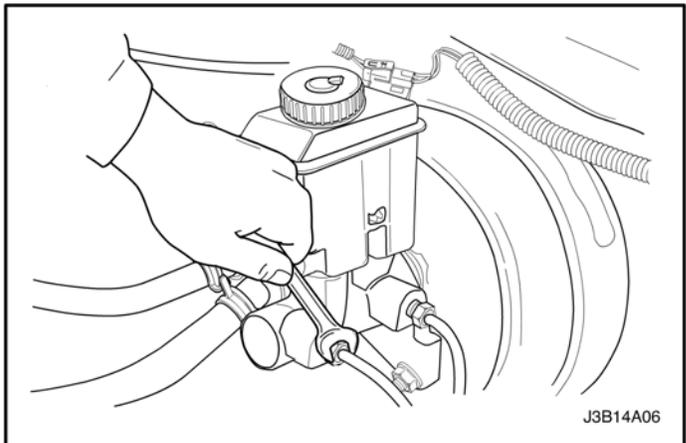
3. Disconnect the front brake line at the master cylinder.
4. Allow the brake fluid to fill the master cylinder internal cavities and begins to flow from the front pipe connector port.
5. Reconnect the brake line to the master cylinder. **Tighten the brake line to 16 N·m (12 lb-ft).**



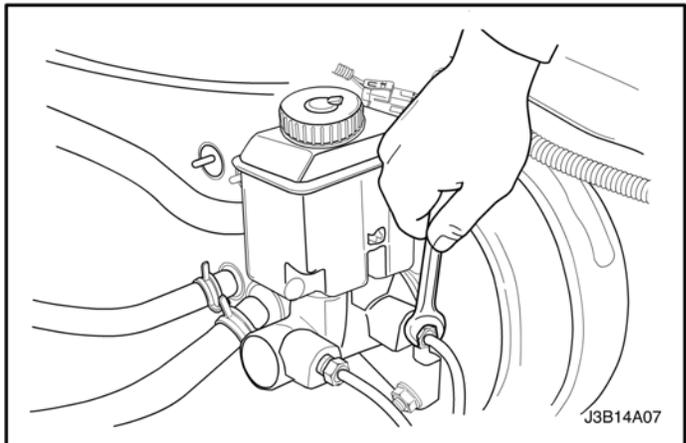
6. Slowly push and hold the brake pedal one time.



7. Loosen the front brake line at the master cylinder to purge air from the cylinder.
8. **Tighten the brake line to 16 N·m (12 lb-ft)**, and then release the brake pedal slowly. Wait 15 seconds before proceeding to the next step.
9. Repeat steps 6 through 8, including the 15-second wait, until all the air is removed from the master cylinder bore.



10. After all the air has been removed at the forward connection, bleed the master cylinder at the rear (cowl) connection in the same manner as with the front connection.

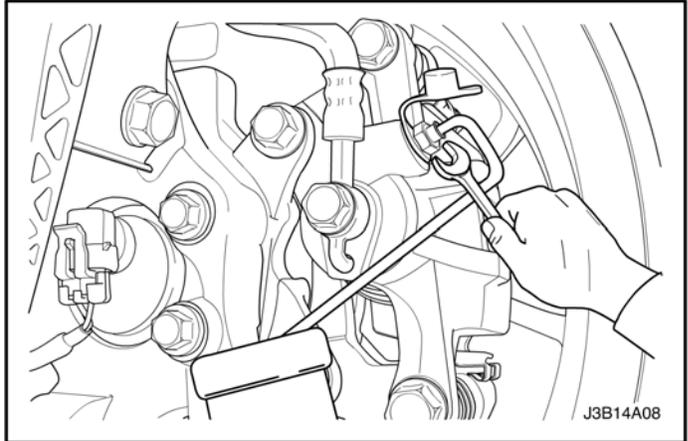


11. Remove the right rear bleeder valve dust cover and attach a transparent tube over the wheel bleeder valve. Allow the tube to hang submerged in brake fluid in a transparent container.

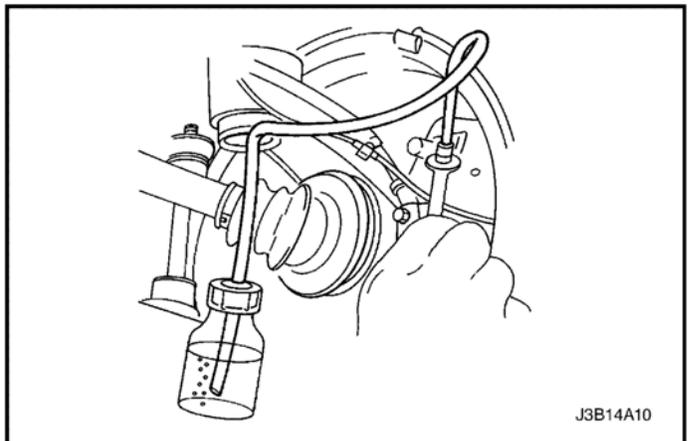
NOTE:

Be sure that all brake bleed equipment has been drained, cleaned and flushed and refilled with only Suzuki approved part number 990B0-99900-PKG brake fluid.

12. Slowly push and hold the brake pedal one time.
13. Loosen the bleeder screw to purge the air from the cylinder.
14. **Tighten the bleeder screw to 8 N·m (71 lb-in).**
15. Slowly release the brake pedal. Wait 15 seconds before proceeding with the next step.
16. Repeat the sequence steps 12 through 15, until all the air is removed. It may be necessary to repeat the sequence 10 or more times to remove all the air, while never allowing the master cylinder fluid to drop below one-half full of fluid.



17. Repeat steps 11 through 16 for each remaining wheel cylinder; left front, left rear, and right front.
18. Check the brake pedal for sponginess. Repeat the entire bleeding procedure to correct a spongy feeling pedal.
19. Replace the bleeder valve dust covers.



END OF SECTION "D"

- Brake System Bleed Procedure