

SUZUKI BCM 1.0 APPLICATION

Operator's Manual

tech 1®

SOME THINGS YOU SHOULD KNOW



CAUTION:

EXHAUST GAS

When performing any checks with the engine running in an enclosed space such as a garage, be sure there is proper ventilation. Never inhale exhaust gases; they contain carbon monoxide, a colorless, odorless extremely dangerous gas which can cause unconsciousness or death.



CAUTION:

To help avoid personal injury always set the parking brake securely and block the drive wheels before performing any checks or repairs on the vehicle.

DISCLAIMER

The **TECH 1** is designed for use by trained service personnel only. It has been developed for the sole purpose of diagnosing and repairing automotive electronic systems. Every attempt has been made to provide complete and accurate technical information based on factory service information available at the time of publication. However, the right is reserved to make changes at any time without notice.

FCC COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, and may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

SUZUKI 95-96 BCM OPERATOR'S MANUAL

INSTRUCTIONS FOR CHANGE PAGES

November, 1996

The Suzuki BCM 1.0 Application is now included in the Suzuki Mass Storage Cartridge. Some pages in the Suzuki 95-96 BCM Operator's Manual have been revised to include instructions for using the Mass Storage Cartridge. The revised pages also include updated vehicle coverage charts.

The change pages replace existing individual double-sided pages in the operator's manual. Please read the following instructions carefully to assure accuracy in your operator's manual.

Put the enclosed change pages in the appropriate places in the Suzuki 95-96 BCM Operator's Manual in the Suzuki binder. Remove the corresponding pages from the appropriate manual, and replace them with these new pages:

SUZUKI 95-96 BCM CARTRIDGE

Operator's Manual

- Front Cover / Some Things You Should Know
- Table of Contents / Blank Page
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- Pages 2-1 / 2-2
- Pages 4-1 / 4-2
- Pages 5-1 / 5-2
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1.0 SUZUKI BCM 1.0 APPLICATION DESCRIPTION

The Suzuki BCM 1.0 Application is included in the Suzuki Mass Storage Cartridge and is used with the **TECH 1** to diagnose and troubleshoot the Automatic Transmission (A/T), Antilock Brake System (ABS), and Airbag systems used on the following models.

NORTH AMERICAN MARKET

YEAR	MODEL	SYSTEM	ECU MANUFACTURER	ECU NO.
95-97	ESTEEM 1600 (SY416)	4AT	AISIN A.W.	1
		ABS (4 CHANNEL)	SUMITOMO DENKO	2
		AIRBAG	SIEMENS AG.	3
96-97	SIDEKICK 1800 (SV418)	ABS (3 CHANNEL)	SUMITOMO DENKO	2

OTHER THAN NORTH AMERICAN MARKET

MODEL	SYSTEM	ECU MANUFACTURER	ECU NO.
SY416/415/ 416/418	4AT	AISIN A.W.	1
	ABS (4 CHANNEL)	SUMITOMO DENKO	2
	AIRBAG	SIEMENS AG.	3
SV620	ABS (3 CHANNEL)	SUMITOMO DENKO	2
SV420D	ABS (3 CHANNEL)	SUMITOMO DENKO	2
SE416/SZ416	4AT	AISIN A.W.	4

HOW THE SUZUKI BCM 1.0 APPLICATION WORKS WITH THE TECH 1

The **TECH 1** lets you monitor data and control ECU operation by communicating with the ECU via the serial Data Link Connector (DLC) present in the vehicle. The **TECH 1** consists of a microcomputer, which communicates with the ECU and controls its operation, a keypad to receive directions from you, and a display to provide the data you need to diagnose vehicle electronic problems. The **TECH 1** communicates with the ECU by applying an electrical signal to the serial data link connector Diagnostic Enable pin, then reads the ECU data signal from one of the serial data link connector pins, and translates it into an intelligible data display. The Suzuki BCM 1.0 Application in the Suzuki Mass Storage Cartridge is the software program which performs all of the functions described in this operator's manual.

GENERAL TECH 1 KEY FUNCTIONS

YES & NO	Answer questions asked on TECH 1 display and select data parameters to monitor.
EXIT	Return to previous step.
↑ & ↓	Scroll through test mode selection menus and control display of captured data.
0 - 9	Designate trouble codes.
F0 - F9	Select and control test mode.
F8	Print Data List parameters.
ENTER	Enter designated trouble code.

2.0 GETTING STARTED

Before operating the Suzuki BCM 1.0 Application with the **TECH 1** the following steps must be performed:

1. Insert the Suzuki Mass Storage Cartridge that contains the Suzuki BCM 1.0 Application into the bottom slot of the **TECH 1**. Verify that no other master cartridge is installed in the top slot.
2. Make sure the vehicle ignition is OFF.
3. Connect the **TECH 1** Cable to the top of the **TECH 1**.
4. Locate the vehicle's serial Data Link Connector (DLC). It is usually under the dash on the driver's side. Refer to the vehicle service manual if you are in doubt.

Plug the **TECH 1** Cable into the vehicle's DLC.

5. Turn the ignition switch on.

NOTE:

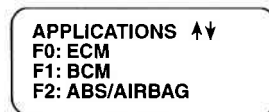
For vehicles equipped with an Immobilizer control system, power is supplied to the **TECH 1** when the ignition switch is ON.

6. Verify that the tester displays the screen below.



SUZUKI
MASS STORAGE
CARTRIDGE - VX.X
<ENTER>

7. Press **ENTER** to display the APPLICATIONS menu.



APPLICATIONS ↑↓
F0: ECM
F1: BCM
F2: ABS/AIRBAG

Press the key to the left of BCM from the APPLICATIONS menu. If more than three applications are available, use **↑** or **↓** to scroll the display.

8. Verify that the tester displays the screen below.

SUZUKI
BCM 1.0
(ENTER)

9. Press ENTER to display the Language Selection menu.

If the **TECH 1** display informs you that the companion application is missing, contact your **TECH 1** distributor.

F0: ENGLISH
F1: ニホンゴ
F2: DEUTSCH
F3: FRANCAIS

Press the function key to the left of the language you wish to select. After the language is selected, proceed to Section 4.0.

4.0 SELECTING THE VEHICLE

When you have selected a language, the next step is to select a system to test.

SELECTING THE SYSTEM

The **TECH 1** displays the systems available for testing. Press the key listed to the left of the system you wish to test.

SYSTEM SELECT
F0: TRANSMISSION
F1: ABS
F2: AIRBAG

TRANSMISSION

When F0: Transmission is selected, the tester asks if you are testing an SY SERIES vehicle. Press **YES** if the vehicle is an SY SERIES, or press **NO** if the vehicle is not an SY SERIES vehicle. The tester will advance to the Select Mode menu. Detailed operating instructions for the various test modes are included in Section 5.0 of this manual.

SY SERIES?
(YES/NO)

ABS

If F1: ABS is selected, the tester proceeds to the Select Mode menu. Detailed operating instructions for the various test modes are included in Section 5.0 of this manual.

AIRBAG

When F2: Airbag is selected, the following screen is displayed.

ALWAYS DO AIRBAG
DIAG SYS. CHECK
IN S/M (AIRBAG
SYS. SECTION) ↓

Perform the Airbag Diagnostic System Check as described in the Suzuki Service Manual, then press ↓ to proceed to the Select Mode menu.

ACTIVE TECH 1 KEYS

F0 - F2 Select system.

YES - NO Select SY SERIES vehicle or other vehicle.

↓ Proceed to the Select Mode menu.

5.0 SELECTING AND OPERATING THE TEST MODES

The following section contains a brief description of each test mode available in the Suzuki BCM 1.0 Application. A more detailed description is included later in this section, along with the operating procedure for each test mode.

MODE F0: DATA LIST

Monitor data parameters from the ECU.

MODE F1: PRINT DATA

Send one data stream of information to a serial printer, terminal or smart device.

MODE F2: TROUBLE CODES

Display stored trouble codes on all models and clear stored trouble codes on certain models.

MODE F3: SNAPSHOT

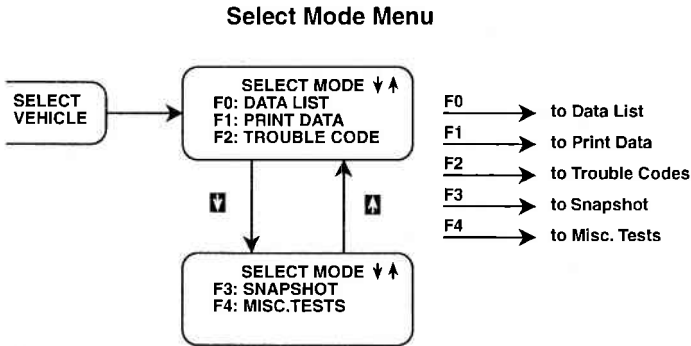
Capture and store ECU data parameters. Data is captured before and after a "trigger" point. Triggers can be on any trouble code, a particular trouble code, or manual **TECH 1** key press. Captured data can then be displayed as well as trouble codes.

NOTE: The Snapshot mode is not available when testing the Airbag system.

ECU NO.	SYSTEM	DATA LIST	PRINT DATA	TROUBLE CODE	SNAPSHOT
1	A/T	•	•	•	•
2	ABS	•	•	•	•
3	AIRBAG	•	•	•	
4	A/T	•	•	•	•

SELECTING TEST MODES

The **TECH 1** makes selecting the test mode easy by displaying a list of tests (a test mode “menu”). The menu also displays which key is used to select each test mode. An example test mode menu is shown below.



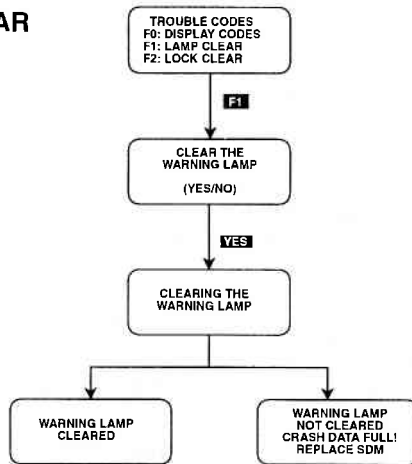
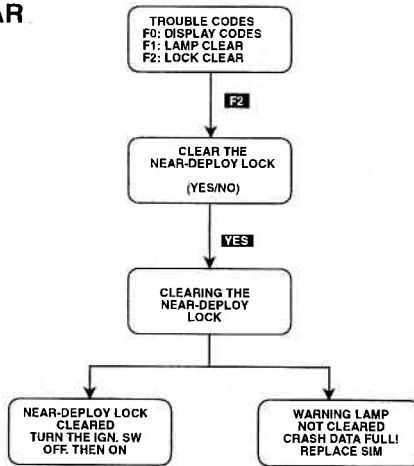
To select a test mode, simply press the **TECH 1** key listed to the left of the test mode on the menu. Since there are up to four test modes, the keys **F0** - **F3** are used.

Up to three test modes are shown as soon as the ECU is selected. If other test modes are available, the display automatically scrolls to the next display after three seconds. The display automatically scrolls between the menu screens. To stop the automatic scrolling, press either the **↑** or **↓** key. The menu may then be manually changed by pressing either the **↑** or **↓** key. All multiple menus of more than three items scroll in this way.

REGARDLESS OF WHICH TEST MODES ARE DISPLAYED, ANY TEST MODE CAN BE SELECTED AT ANY TIME FROM THE MENU.

ACTIVE TECH 1 KEYS

- | | |
|-----------------------|--|
| F0 - F3 | Select Test mode. |
| ↑ & ↓ | Stop automatic menu scrolling, then used to manually control the menu display. |
| EXIT | Return to System Selection menu. |

TROUBLE CODES**MODE F2****F1: LAMP CLEAR****F2: LOCK CLEAR****ACTIVE TECH 1 KEYS FOR TROUBLE CODES****ENTER**

Clear all stored ECU trouble codes.

YES

Clear all stored ECU trouble codes.

NO

Return to display trouble codes. Codes are not cleared.

EXIT

Terminate the trouble code display and return to the Select Mode menu.

The SNAPSHOT mode is not available when testing Airbag systems.

The purpose of the SNAPSHOT test mode is to help you isolate an intermittent or transient problem by storing data parameters before and or after the problem occurs. For ABS, the tester stops saving data when a current trouble code occurs.

When the **TECH 1** is operating in SNAPSHOT mode, it is constantly storing information about data parameters and trouble codes. A time and position index for the stored information is also saved.

The **TECH 1** stores all of the Data List parameters and trouble codes for the selected system. When the memory is full, the oldest (earliest) data collected is erased to make room for new information.

A "TRIGGER" tells the **TECH 1** when to stop collecting data. For the SUZUKI BCM 1.0 Application, a trigger occurs when any trouble code is detected by the ECU.

TRIGGER CONDITION

The trigger condition defines the specific circumstances under which you want the trigger to be set. The possible trigger conditions are:

F0: ANY CODE

If any trouble code is detected by the ECU, it will cause the trigger to be set.

F1: SINGLE CODE

For A/T systems you can select a specific trouble code that must be detected before the trigger will be set. Step 3 in the Operating Procedure tells you how to enter the code. **F1: Single Code is not available when testing ABS.**

F2: MANUAL TRIGGER

While operating the SNAPSHOT mode, you can always cause the trigger to be set by pressing the **ENTER** key.

6.0 FINISHING UP

After using the Suzuki BCM 1.0 Application, a few simple steps will insure that you get the most life out of your diagnostic tool.

First, remove power to the **TECH 1** by disconnecting the serial data link cable from the serial data link connector. You may want to inspect the cable and connector for any damage or corrosion.

Next, unplug the cartridge and store it and the cable in the travelling case.

If the **TECH 1** should become dirty you may wipe it off with a clean cloth and mild detergent or hand soap. Avoid using harsh solvents such as petroleum based cleaning agents, Benzene, Trichloroethylene, etc. Although the **TECH 1** is water resistant it is not water-proof so be sure to thoroughly dry off the **TECH 1** prior to storage.

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7.0 TROUBLE CODE DESCRIPTIONS

All trouble codes that can be displayed with the Suzuki BCM 1.0 Application, along with a brief description of each code, are listed on the following pages.

TRANSMISSION TROUBLE CODES

ECU TROUBLE CODE	TECH 1 DISPLAY DESCRIPTOR	TROUBLE CODE DESCRIPTION
21	SHIFT SOLENOID NO. 1 OPEN	Shift Solenoid No. 1 open.
22	SHIFT SOLENOID NO. 1 SHORT	Shift Solenoid No. 1 short.
23	SHIFT SOLENOID NO. 2 OPEN	Shift Solenoid No. 2 open.
24	SHIFT SOLENOID NO. 2 SHORT	Shift Solenoid No. 2 short.
25	TCC SOLENOID OPEN	TCC Solenoid open.
26	TCC SOLENOID SHORT	TCC Solenoid short.
31	VSS NO SIGNAL	Vehicle Speed Sensor signal not received by the TCM. Vehicle Speed Sensor circuit failure.
32	THROTTLE POS. SIGNAL HIGH	Throttle Position Signal too high. Throttle Position Sensor or circuit failure.
33	THROTTLE POS. SIGNAL LOW	Throttle Position Signal too low. Throttle Position Sensor or circuit failure.
34	TRANS. RANGE SWITCH FAIL	Two transmission range signals or more fed to the TCM. Transmission range switch or circuit failure.

TRANSMISSION TROUBLE CODES (cont.)

36	VSS (TRANS. & METER) NO SIGNAL	Vehicle Speed Sensor (Transmission & Meter) Signal not received by the TCM. Vehicle Speed Sensor (Transmission & Meter) circuit failure.
37	INPUT REVOLUTION SENSOR FAIL	Input Revolution Sensor signal not received by the TCM. Input Revolution Sensor circuit failure.
41	PRESS. CONT. SOL OPEN	Pressure Control Solenoid open.
42	PRESS. CONT. SOL SHORT	Pressure Control Solenoid short.
51	COOLANT TEMP. SIGNAL FAIL	Coolant Temperature Signal is held low too long. Coolant Temperature Signal system or circuit problem.

8.0 DATA LIST PARAMETER DESCRIPTIONS

The **TECH 1** is capable of displaying a wide variety of data parameters in Data List and Snapshot modes. The ECU sends the **TECH 1** information regarding the state of the ECU and the **TECH 1** 'translates' and displays this information in the form of parameters selected by the service technician. This section describes those parameters.

There are two basic types of ECU parameters: discrete and analog. Discrete parameters are 'bits' of information and can be in only one of two distinct states (ON/OFF, OPEN/CLOSED, etc.). Switches and solenoids are examples of discrete parameters. Analog parameters are used to represent quantities and are displayed as a value with appropriate units. Examples of analog parameters include Vehicle Speed, Throttle Position, Battery Voltage, etc.

Parameters are grouped by ECU function. The parameters are listed in alphabetical order within each category. The categories are:

- 1) General
- 2) Electrical
- 3) Miscellaneous

CATEGORY DESCRIPTIONS

- 1) General Parameters are those that affect or are effected by many different ECU systems such as Vehicle Speed, Coolant Temp. Signal, and Wheel Speed.
- 2) Electrical Parameters can be used to help diagnose vehicle electrical problems and include Battery Voltage and Pump Motor Voltage.
- 3) The Miscellaneous Parameters section includes parameters such as Brake Switch, Warning Lamp, and Gear Position.

DESCRIPTOR FORMAT

Following is a description of all parameters that can be displayed with the Suzuki BCM 1.0 Application. Included is: 1) a listing of all the parameters available for each category; 2) a description of the parameter; 3) the units, and the range of the analog parameters; 4) the state of the discreet parameters.

The parameters are listed below according to category. The ECU related to the parameter is also indicated.

GENERAL PARAMETERS

Coolant Temp. Signal
Input Revolution
Pressure Control Solenoid
Throttle Position
Vehicle Speed
Wheel Speed (RF, LF, RR, LR)

SYSTEM

A/T
A/T
A/T
A/T
A/T
ABS

ELECTRICAL PARAMETERS

Battery Voltage
Battery Voltage
Driver Initiator Resistance
G-Sensor
Ignition Voltage
Passenger Initiator Resistance
Pump Motor Voltage

SYSTEM

A/T
ABS
AIRBAG
ABS
AIRBAG
AIRBAG
ABS

MISCELLANEOUS PARAMETERS

4WD-L Switch
Brake Switch
Brake Switch
Gear Position
Hydraulic Unit Switch
Mode Select Switch
O/D Off Switch
Park/Neutral Position Signal
Shift Solenoid No. 1 & No. 2
TCC Solenoid
Transmission Range
Warning Lamp

SYSTEM

A/T
ABS
A/T
A/T
ABS
A/T
A/T
A/T
A/T
A/T
A/T
AIRBAG

4.

SUZUKI
MASS STORAGE
CARTRIDGE - VX.X
<ENTER>

SUZUKI
BCM 1.0

(ENTER)

**Keyboard or display locked up or program
sporadically returns to first page**

MOST LIKELY CAUSE:

- Serial data link cable loose or bad.

OTHER POSSIBLE CAUSES:

- Master Cartridge loose or dirty contacts.
- **TECH 1** malfunction.

RECOMMENDATIONS:

- Cycle power to the **TECH 1** (unplug & replug the serial data link connector).
- Check **TECH 1** cartridge socket and cartridge edge connector.
- Check serial data link cable & connector for wear or corrosion.

5.

POSSIBLE WRONG
ECU SELECTED, NO
DATA, CHECK LINK
AND RESELECT

SERIAL DATA FAIL
CHECK DATA LINK
AND RESELECT
(EXIT)

TECH 1 is not receiving data

MOST LIKELY CAUSE:

- ECU-serial data link connector cable problems.
- Stop in ABS control module communication function (refer to the NOTE on Page 5-3).

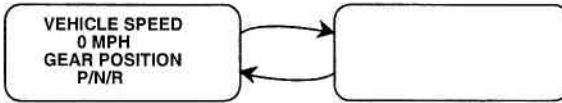
OTHER POSSIBLE CAUSES:

- Serial data link cable loose or bad or connector pins loose or corroded.
- Bad ECU.

RECOMMENDATIONS:

- Verify a good serial data link cable connection.
- Cycle power to the **TECH 1**.
- Run the **TECH 1** Self-test.

6.



Data List parameters flash on and off.

MOST LIKELY CAUSE:

- Serial data link cable loose or bad.

OTHER POSSIBLE CAUSES:

- Serial data link cable connector pins loose or corroded.
- ECU-serial data link connector cable problems.
- Intermittent ECU problem.

RECOMMENDATIONS:

- Verify a good serial data link cable connection.
- Cycle power to the **TECH 1**.

7.



MOST LIKELY CAUSE:

- BCM Application is not installed in the Mass Storage Cartridge.

OTHER POSSIBLE CAUSES:

- Mass Storage Cartridge is not installed correctly.
- Wrong cartridge is installed in the tester.

RECOMMENDATIONS:

- Confirm that the Suzuki Mass Storage Cartridge is correctly installed in the bottom cartridge slot of the tester.
- Confirm that no other Master or Mass Storage Cartridge is installed in the top cartridge slot.
- Contact your **TECH 1** distributor to have the application installed in the Mass Storage Cartridge.