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1. One-Year Limited Warranty

Subject to the conditions of this limited warranty, Foxwell Technology Co., Ltd (“FOXWELL”) warrants its customer that this product is free of defects in material and workmanship at the time of its original purchase for a subsequent period of one (1) year.

In the event this product fails to operate under normal use, during the warranty period, due to defects in materials and workmanship, FOXWELL will, at its sole option, either repair or replace the product in accordance with the terms and conditions stipulated herein.

Terms and Conditions

1. If FOXWELL repairs or replaces the product, the repaired or replaced product shall be warranted for the remaining time of the original warranty period. No charge will be made to the customer for replacement parts or labor charges incurred by FOXWELL in repairing or replacing the defective parts.

2. The customer shall have no coverage or benefits under this limited warranty if any of the following conditions are applicable:

a) The product has been subjected to abnormal use, abnormal conditions, improper storage, exposure to moisture or dampness, unauthorized modifications, unauthorized repair, misuse, neglect, abuse, accident, alteration, improper installation, or other acts which are not the fault of FOXWELL, including damage caused by shipping.

b) The Product has been damaged from external causes such as collision with an object, or from fire, flooding, sand, dirt, windstorm, lightning, earthquake or damage from exposure to weather conditions, an Act of God, or battery leakage, theft, blown fuse, improper use of any electrical source, or the product was used in combination or connection with other product, attachments, supplies or consumables not manufactured or distributed by FOXWELL.

3. The customer shall bear the cost of shipping the product to FOXWELL. And FOXWELL shall bear the cost of shipping the product back to the customer after the completion of service under this limited warranty.

4. FOXWELL does not warrant uninterrupted or error-free operation of the product. If a problem develops during the limited warranty period, the consumer shall take the following step-by-step procedure:

- a) The customer shall return the product to the place of purchase for repair or replacement processing, contact your local FOXWELL distributor to get further information.
- b) The customer shall include a return address, daytime phone number and/or fax number, complete description of the problem and original invoice specifying date of purchase and serial number.
- c) The customer will be billed for any parts or labor charges not covered by this limited warranty.
- d) FOXWELL will repair the Product under the limited warranty within 30 days after receipt of the product. If FOXWELL cannot perform repairs covered under this limited warranty within 30 days, or after a reasonable number of attempts to repair the same defect, FOXWELL at its option, will provide a replacement product or refund the purchase price of the product less a reasonable amount for usage.
- e) If the product is returned during the limited warranty period, but the problem with the product is not covered under the terms and conditions of this limited warranty, the customer will be notified and given an estimate of the charges the customer must pay to have the product repaired, with all shipping charges billed to the customer. If the estimate is refused, the product will be returned freight collect. If the product is returned after the expiration of the limited warranty period, FOXWELL's normal service policies shall apply and the customer will be responsible for all shipping charges.

5. ANY IMPLIED WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR USE, SHALL BE LIMITED TO THE DURATION OF THE FOREGOING LIMITED WRITTEN WARRANTY. OTHERWISE, THE FOREGOING LIMITED WARRANTY IS THE CONSUMER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. FOXWELL SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF ANTICIPATED BENEFITS OR PROFITS, LOSS OF SAVINGS OR REVENUE, LOSS OF DATA, PUNITIVE DAMAGES, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF ANY SUBSTITUTE EQUIPMENT OR FACILITIES, DOWNTIME, THE CLAIMS OF ANY THIRD PARTIES, INCLUDING CUSTOMERS, AND

INJURY TO PROPERTY, RESULTING FROM THE PURCHASE OR USE OF THE PRODUCT OR ARISING FROM BREACH OF THE WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL OR EQUITABLE THEORY, EVEN IF FOXWELL KNEW OF THE LIKELIHOOD OF SUCH DAMAGES. FOXWELL SHALL NOT BE LIABLE FOR DELAY IN RENDERING SERVICE UNDER THE LIMITED WARRANTY, OR LOSS OF USE DURING THE PERIOD THAT THE PRODUCT IS BEING REPAIRED.




6. Some states do not allow limitation of how long an implied warranty lasts, so the one year warranty limitation may not apply to you (the Consumer). Some states do not allow the exclusion or limitation of incidental and consequential damages, so certain of the above limitations or exclusions may not apply to you (the Consumer). This limited warranty gives the Consumer specific legal rights and the Consumer may also have other rights, which vary from state to state.

2. Safety Information

For your safety, and to prevent damage to the equipment and vehicles, read this manual thoroughly before operating your PCS-BST1 tool. The safety messages presented below and throughout this user's manual are reminders to the operator to exercise extreme care when using this device. Always refer to and follow safety messages and test procedures provided by the manufacturer of the vehicle or equipment being tested. Read, understand and follow all safety messages and instructions in this manual.

2.1 Conventions Used

We provide safety messages to help prevent personal injury and equipment damage. Below are signal words we used to indicate the hazard level in a condition.

No.	Signal Word	Hazard Level
1		Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.
2		Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.
3		Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.

2.2 Important Safety Instructions

And always use your EPB service tool as described in the user's manual, and follow all safety messages.

⚠WARNING Do not route the test cable in a manner that would interfere with driving controls.

⚠WARNING Do not exceed voltage limits between inputs specified in this user's manual.

⚠WARNING Always wear ANSI approved goggles to protect your eyes from propelled objects as well as hot or caustic liquids.

⚠WARNING Fuel, oil vapors, hot steam, hot toxic exhaust gases, acid, refrigerant and other debris produced by a malfunction engine can cause serious injury or death. Do not use EPB service tool in areas where explosive vapor may collect, such as in below-ground pits, confined areas, or areas that are less than 18 inches (45 cm) above the floor.

⚠WARNING Do not smoke, strike a match, or cause a spark near the vehicle while testing and keep all sparks, heated items and open flames away from the battery and fuel / fuel vapors as they are highly flammable.

⚠WARNING Keep a dry chemical fire extinguisher suitable for gasoline, chemical and electrical fires in work area.

⚠WARNING Always be aware of rotating parts that move at high speed when an engine is running and keep a safe distance from these parts as well as other potentially moving objects to avoid serious injury.

⚠WARNING Do not touch engine components that get very hot when an engine is running to avoid severe burns.

⚠WARNING Block drive wheels before testing with engine running. Put the transmission in park (for automatic transmission) or neutral (for manual transmission). And never leave a running engine unattended.

⚠WARNING Do not wear jewelry or loose fitting clothing when working on engine.

⚠CAUTION Make sure to turn off ignition before connecting or disconnecting the EPB service tool.

3. Using This Manual

We provide instructions for the usage of your EPB service tool in this manual.

Below is a list of conventions we used in the manual.

Safety Information

See ***Safety Information*** on page 6.

Bold Text

Bold emphasis is used in procedures to highlight selectable items such as buttons and menu options.

Example:

Use the **UP/DOWN** key to select the desired language.

Bold-Italic Text

Bold-italic text is used in the procedures to highlight the menus on the EPB service tool screen.

Example:

Use the **UP/DOWN** key to select **Language** from ***System Setup*** screen.

Symbols and Icons

√ Check Note

Additional information about the subject in the preceding paragraph is introduced by a √ Check Note.

Example:

√ The EPB service tool is set to display English menus by default.

● Solid Spot

Operation tips and lists that apply to specific tool are introduced by a solid spot ●.

Example:

System Setup allows you to:

- Select menu languages.
- Adjust display contrast.
- View tool information.

IMPORTANT

IMPORTANT indicates a situation, which, if not avoided, may result in damage to the test equipment or vehicle.

Example:

IMPORTANT Do not soak keypad as water might find its way into the EPB service tool.

NOTE

NOTE provides helpful information such as additional explanations, tips, and comments.

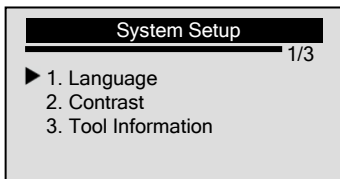
Example:

NOTE Not all data are supported by all vehicles.

Screens

Some help messages, information, and data displayed on the EPB service tool are also shown in graphical text boxes. The screens presented are examples only and actual test screen may vary for each vehicle being tested.

Example:



Arrow Icon

▶ An arrow icon indicates a procedure.

Example:

▶ To change menu language:

1. Use the **UP/DOWN** key to select **Language** from ***System Setup*** screen.
2. Press the **ENTER** key to confirm.

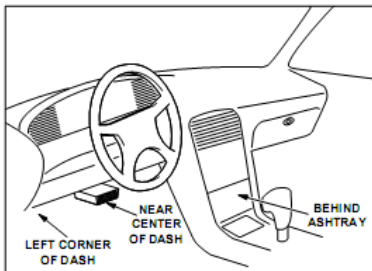
4. Introduction

PCE-BST1 Electric Parking Brake Service Tool is developed by the most distinguished mind of the industry. It is specially designed to work with Mercedes Benz E211/E219 (up to 2006), R230 and S221 (up to 2007) models, Volkswagen Passat (2005-on), Audi A5 (2007-on), Audi A6/A8 (2004-on), Volvo XC70 (2008-2009), XC60 (2009), V70 (2008-2009), S80 (2007-2009), Ford Focus C-MAX (2002, 2007), LS (2003-2006).

4.1 Data Link Connector

The Data Link Connector (DLC) is a standard 16-pin interface located under the dashboard on the driver's side of the passenger compartment. If the DLC is not located under the dashboard as stated, a decal describing its location should be attached to the dashboard in the area the DLC should have been located.

NOTE On some Asian and European vehicles the DLC is located behind the “ashtray”, which must be removed to access it, or on the far left corner of the dash. If the DLC cannot be found, consult the vehicle’s service manual for the location.



4.2 About PCE-BST1

4.2.1 Buttons and Controls



- A. OBD II Port - provides communication for vehicle DLC.
- B. LCD Display - shows menus, test results and operation tips.
- C. UP Key - moves selection up. Scrolls back and forth through codes retrieved.
- D. DOWN Key - moves selection down. Scrolls back and forth through codes retrieved.
- E. Y Key - confirms an action or movement and moves to next level.
- F. N Key - cancels an action and returns to previous screen or level.
- G. USB Port - provides a USB connection between the EPB service tool and PC or laptop.

IMPORTANT Do not use solvents such as alcohol to clean keypad or display. Use a mild nonabrasive detergent and a soft cotton cloth.

IMPORTANT Do not soak keypad as water might find its way into the EPB service tool.

4.2.2 Accessories Included

No.	Part	Description
1	User's Manual	Provides operation instructions for the usage of EPB service tool.
2	USB Cable	Provides USB communications for updates of software and DTCs.
3	OBDII Cable	Provides connection for vehicle's DLC.

4.2.3 Specifications

No.	Item	Specification
1	Display	Backlit, 128 x 64 pixel display with contrast adjustment.
2	Working Temperature	0 to 60°C(32 to 140°F)
3	Storage Temperature	-20 to 70°C (-4 to 158°F)
4	Power	8-18 Volts powered by vehicle battery
6	Dimensions	185mm*85mm*35mm (L*W*H)
7	Weight	750g

4.2.4 Power

The PCE-BST1 is powered up by vehicle battery when diagnosing.
To power on PCE-BST1



1. Locate the diagnostic interface on vehicle.
2. Plug in the EPB service tool's OBDII connector to the DLC.

NOTE A plastic DLC cover may be found on some vehicles.
Remove the cover before plugging the OBD2 cable.

4.2.5 System Setup

System Setup allows you to:

- Select menu languages.

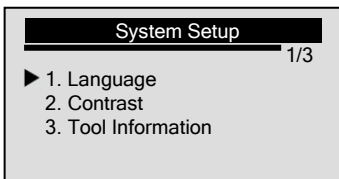
- Adjust display contrast.
- View tool information.

√ **System Setup** settings remain until changes to the existing setups are made.



To do system setup:

1. Press **N** key to enter **System Setup** from home screen.



√ Follow on-screen instructions to program PCE-BST1 to meet your specific needs.

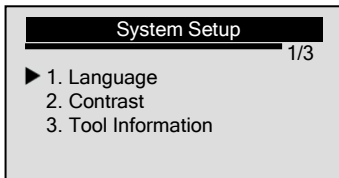
Changing Language

√PCE-BST1 is set to display English menus by default.

To change system language:



1. Use the **UP/DOWN** key to select **Language** from **System Setup** screen.
2. Press the **Y** key to confirm.



3. Use the **UP/DOWN** key to select desired language.

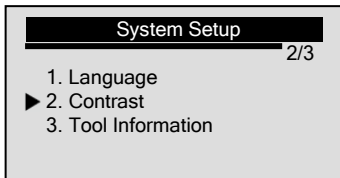


4. Press the **N** key to save language setting and return.

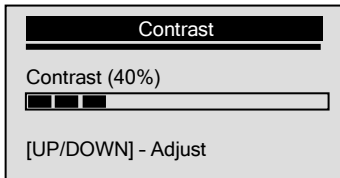
Adjusting Display Contrast

To adjust display contrast:

- ▶ 1. Use the **UP/DOWN** key to select **Contrast** from *System Setup* screen.
2. Press the **Y** key to confirm.



3. Use the **UP/DOWN** key to adjust contrast.



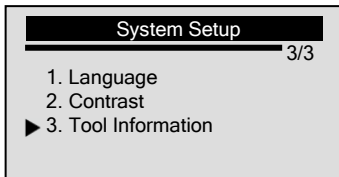
4. Press the **Y** key to save contrast setting and return.

Tool Information

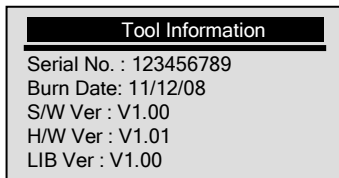
The *Tool Information* function is used to view tool information such as software version that may be needed when contacting customer service.

To view tool information:

- ▶ 1. Use the **UP/DOWN** key to select **Tool Information** from **System Setup** screen



2. Press the **ENTER** key to view information.



5. Diagnosis

Diagnostic Menu allows you to:

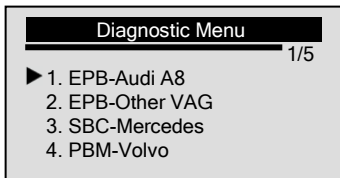
- activate/deactivate brake pads
- read/clear fault codes
- enter thickness of rear brake calipers on Audi A8
- change brake fluid
- Inspect Brake Air
- read ECU Information
- perform activation/service work on Volvo PBM vehicles
- Reset clutch pedal counter
- Perform EPB calibration on Ford vehicles, including emergency release, EPB function test and acceleration sensor configuration.

To perform diagnosis:

- ▶ 1. Turn the ignition off.
2. Release the park brake and make sure the car is properly

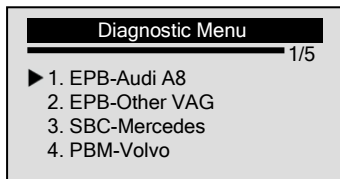
blocked.

3. Locate the vehicle's 16-pin Data Link Connector (DLC).
4. Plug into the OBDII cable to the vehicle's DLC.
5. Turn the ignition on.
6. Press **Y** button from home screen to enter **Diagnostic Menu**.



5.1 Diagnosis on Audi A8

1. Use the **UP/DOWN** key to select **EPB-Audi A8** from **Diagnostic Menu** and press **Y** button to confirm.



5.1.1 Guided Functions

Please select your service purpose properly. **For Pad Change** is used to open the brakes completely for change of worn pads. If you just intend to do repairs on the brakes other than changing the pads, please select **For Repair**. When **For Repair** is selected, the brakes will not open wide enough for pad change and it isn't necessary to do the adaptation for Audi A8 either.

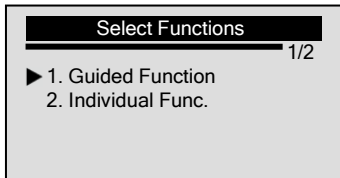
5.1.1.1 For Pad Change

For Pad Change is used to open the brakes completely for change of worn pads.

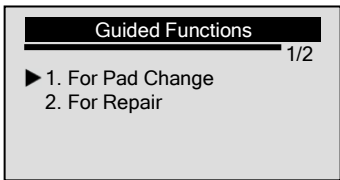
To change brake pads

- ▶ 1. Use the **UP/DOWN** key to select **Guided Function** from **Select**

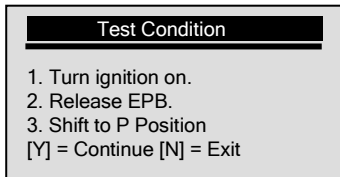
Function menu, and press **Y** button to confirm.



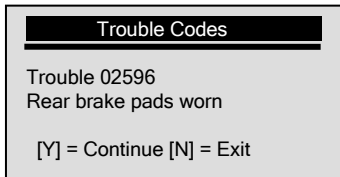
2. Use the **UP/DOWN** key to select **For Pad Change** from **Guided Function** menu, and press **Y** button to confirm.



3. View on-screen operation guides.

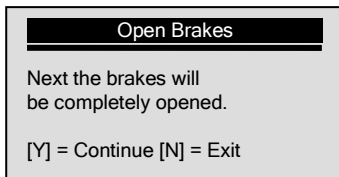


4. Press **Y** button to read trouble codes.

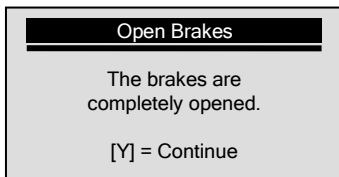


√ If you wish to exit the test, press the **N** key.

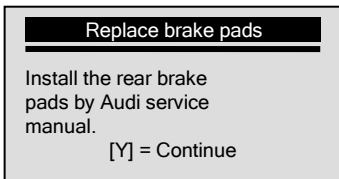
5. Press **Y** button and following screen shows:



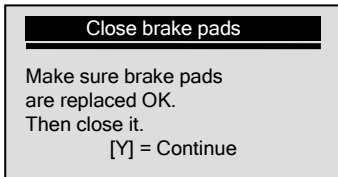
6. Press **Y** button as instructed to open brake pads completely.



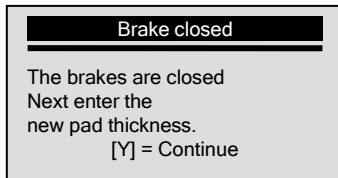
7. Press **Y** button to move to next step, and install new brake pads as prompted.



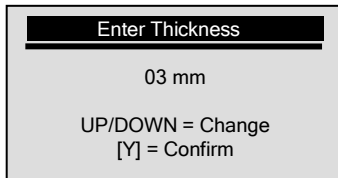
8. *When* brake pads are replaced correctly, close it by pressing Y button.



9. Wait a few minutes until brake pads are closed.



10. Press **Y** button to move to next step.



11. Use **UP/DOWN** key to enter new pad thickness and use the **Y** button to confirm and continue.
12. Wait a few seconds while new thickness is being stored.
13. When new thickness is stored, following screen shows:

Store Thickness

Thickness is stored.
EPB must be closed.
Follow these steps:
[Y] = Continue

14. Use the Y button to continue to recalibrate EPB.

Recalibration

Now the EPB must
be re-calibrated.
Requirements:
1. Shift to P Position
2. Depress brake pedal

prompt screen to be continued...

Recalibration

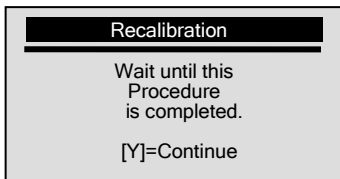
and release EPB.
3. Switch ignition off
and remove key.
4. Lock steering wheel.
[Y]=Continue

15. Press **Y** button to continue and wait until the recalibration is completed.

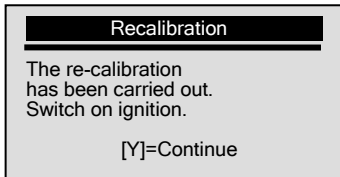
Recalibration

The re-calibration
will be carried out.
The EPB now opens
and closes audibly.

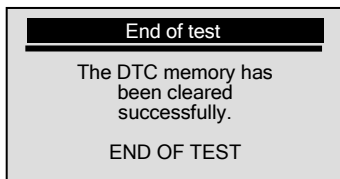
prompt screen to be continued...



16. When recalibration completed, following screen shows:




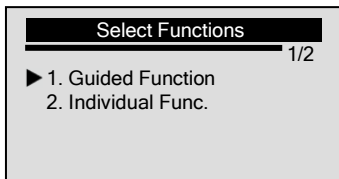
17. Press **Y** button to clear DTC memory, and wait a few seconds until following screen shows, indicating the entire test is completed.



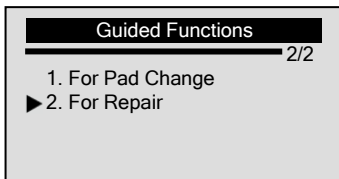
5.1.1.2 For Repair

For Repair is used to open the brake pads to do repair work on brakes.
To do repairs on brakes

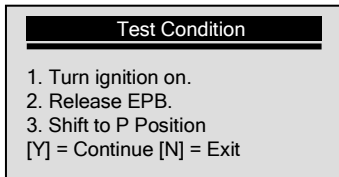
-  1. Use the **UP/DOWN** key to select **Guided Function** from **Select Function** menu, and press **Y** button to confirm.



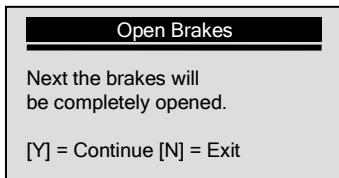
2. Use the **UP/DOWN** key to select For Repair from Guided Function menu, and press **Y** button to confirm.



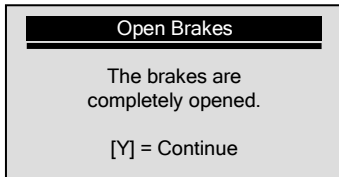
3. Perform as guided and press **Y** button to continue.



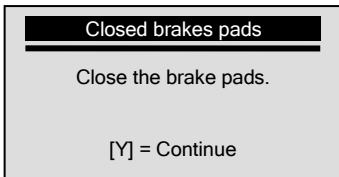
4. Press **Y** button to open brake pads.



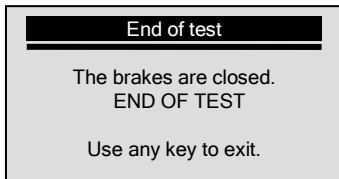
5. Wait a few seconds until following screen shows:



6. Press **Y** button to close the brake pads when finished your repair work.



7. Wait a few seconds until following screen shows, indicating the test has been completed.



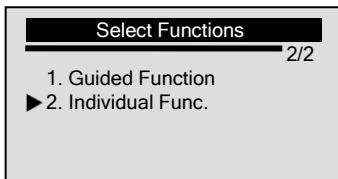
8. Press any key to exit the test.

5.1.2 Individual Functions

Individual functions of Audi A8 include reading/clearing codes, deactivation/activation of brake pads, adaptation after changing new brake caliper, and function test.

To complete individual functions:

- ▶ 1. Use the **UP/DOWN** key to select **Individual Func.** from **Select Function menu**, and press **Y** button to confirm.

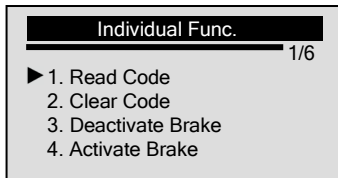


5.1.2.1 Read Codes

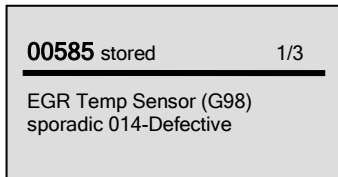
The **Read Codes** function is used to read EPB faults from the vehicle's control modules.

To read codes from vehicle control modules:

- ▶ 1. Use the **UP/DOWN** key to select **Read Codes** from **Individual Func.** screen and press the **Y** key to confirm.



2. View DTCs and their definitions.



- √ If no DTCs are present a message stating "No Codes Found!" is displayed.
- √ If code definition is not found in the built in DTC library, a "DTC definitions not found! Please refer to User's Manual!" message shows, prompting you to look up the definition in the vehicle service manual.

- Use the **UP/DOWN** key to move back and forth through codes when more than one code is retrieved.
- Press the **N** key to return to previous screen.

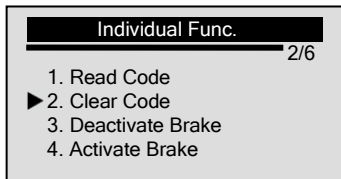
5.1.2.2 Clear Codes

The **Clear Codes** function is used to delete DTCs from vehicle's control module(s).

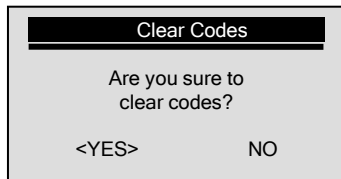
- ✓ Perform **Clear Codes** function only after systems have been checked completely.
- ✓ After servicing the vehicle, erase stored DTCs and verify no codes have been reset. If a DTC returns, problem has not been fixed or other faults are present.
- ✓ This function is performed with KOEO. Do not start the engine.

To erase codes from vehicle control modules:

- Use the **UP/DOWN** key to select **Clear Codes** from **Individual Func.** Screen, and press the **Y** key to confirm.

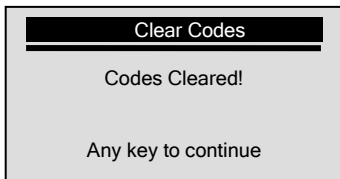


- If codes are to be cleared, use the **UP/DOWN** key to select **YES** and press the **Y** key.



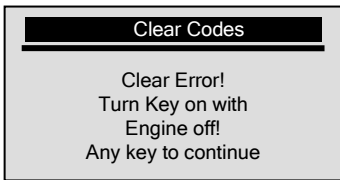
- ✓ If codes not to be deleted, select **NO**, and a "Command Cancelled!" message displays. Wait a few seconds or press any key to return.

3. Wait a few seconds while PCE-BST1 is erasing code(s). Depending on clearing results, one of the following displays:



Codes Cleared screen

Or



Failed to clear screen

4. Wait a few seconds or press any key to return.

5.1.2.3 Deactivate Brake


The **Deactivate Brake** function allows deactivation of brakes for further service/maintenance work on braking system.

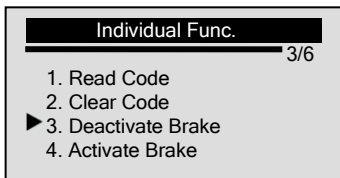
WARNING EPB system must be deactivated before carrying out any maintenance/service work on the brakes such as changing of pads, discs and calipers!

WARNING Use proper tools to avoid the risk of body injuries of mechanics and technicians and damage to the brake system.

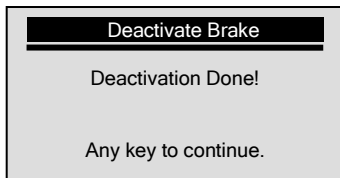
WARNING Make sure the vehicle is properly blocked after deactivation of the system.

To deactivate brake:

-  1. Use the **UP/DOWN** key to select **Deactivate Brake** from **Individual Func.** screen.

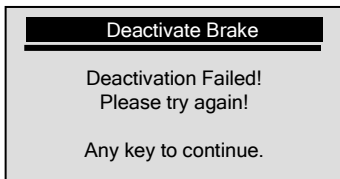


2. Press the **Y** key to confirm.
3. Wait a few seconds while PCE-BST1 is working. Depending on test results, one of the following screen displays.



Deactivation completed screen

Or



Deactivation failed screen

- √ If the “Deactivation Failed!” message displays, follow steps below to troubleshoot it.
- Verify ignition is ON;
 - Make sure the OBDII connector is securely attached;
 - Check that the park brake is released;
 - Turn the ignition off and turn it back to on 10s later;
 - Repeat step 1-3.
- √ If the “Deactivation Failed!” message does not go away, then

contact your local distributor or the manufacturer's customer service department for assistance.

4. Wait a few seconds or press any key to return.

5.1.2.4 Activate Brake

The **Activate Brake** function allows activation of brakes when service/maintenance works on braking system are completed.

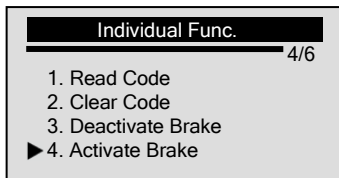
WARNING EPB system must be deactivated before carrying out any maintenance/service work on the brakes such as changing of pads, discs and calipers!

WARNING Use proper tools to avoid the risk of body injuries of mechanics and technicians and damage to the brake system.

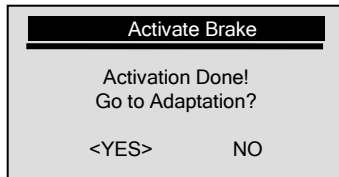
WARNING Make sure the vehicle is properly blocked after deactivation of the system.

To activate brake:

- ▶ 1. Use the **UP/DOWN** key to select **Activate Brake** from **Individual Func.** screen.

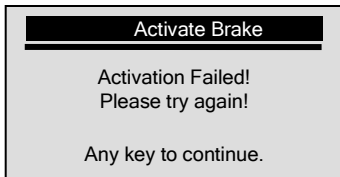


2. Wait a few minutes while the device is activating the brakes. Depending on activation results, one of the following screen displays.



Activation completed screen

Or



Activation failed screen

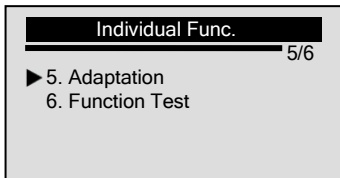
- √ If the "Activation Failed!" message displays, follow steps below to troubleshoot it.
- Verify ignition is ON;
 - Make sure the OBDII connector is securely attached
 - Check that the park brake is released;
 - Turn the ignition off and turn it back to on 10s later;
 - Repeat step 1-2.
- √ If the "Activation Failed!" message does not go away, then contact your local distributor or the manufacturer's customer service department for assistance.

5.1.2.5 Adaptation

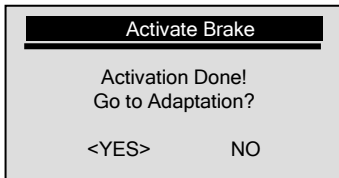
The **Adaptation** function is used to set new calipers thickness of rear brake calipers after changing brake discs & pads on Audi A8 models.

To set new caliper thickness:

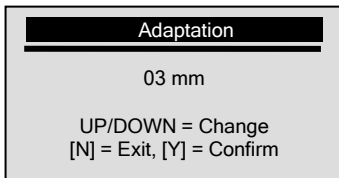
- ▶ 1. Use the **UP/DOWN** key to select **Adaptation** from **Individual Func** screen.



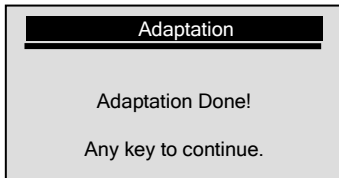
- √ Or use the **UP/DOWN** key to select **YES** and press the **Y** key to proceed with adaptation after finish activation.



2. Wait a few seconds till following screen shows:

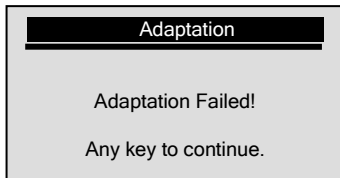


3. Use the **UP/DOWN** key to change and input new caliper thickness and press **Y** button to confirm.
- √ To quit the setting, press **N** button and a “Command canceled message displays.
4. Depending on setting results, one of the following screen displays:



Adaptation completed screen

Or



Adaptation failed screen

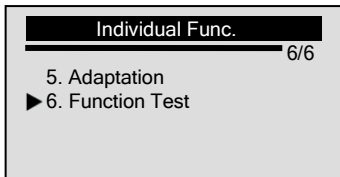
5. Wait a few seconds or press any key to return.

5.1.2.6 Function Test

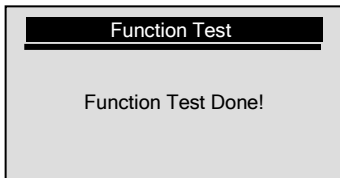
The **Function Test** is used to set new calipers thickness of rear brake calipers after changing brake discs & pads on Audi A8 models.

To set new caliper thickness:

1. Use the **UP/DOWN** key to select **Function Test** from **Select Function** screen.

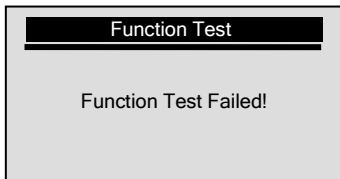


2. Wait a few seconds one of the following screen shows, depending on test results.



Function test completed screen

Or

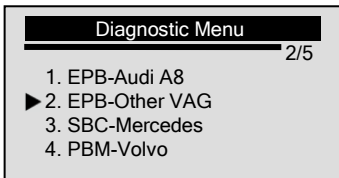


Function test failed screen

3. Wait a few seconds or press any key to return.

5.2 Diagnosis on EPB-Other VAG

1. Use the **UP/DOWN** key to select **EPB-Other VAG** from *Diagnostic Menu* and press **Y** button to confirm.



2. For detailed operation steps, please refer to steps on page 23-28 in *5.1.2 Individual Functions*.

5.3 Diagnosis on Mercedes SBC

PCE-BST1d to deactivate/activate SBC functions, read/clear SBC trouble codes, change brake fluid/bleed brake system, inspect brake air, and retrieve ECU information on Mercedes vehicles that are equipped with SBC system.

- √ For instructions on reading/erasing codes, and deactivation/activation of brakes, please refer operation steps on page 23-28 in *5.1.2 Individual Functions*.

5.3.1 Change Brake Fluid

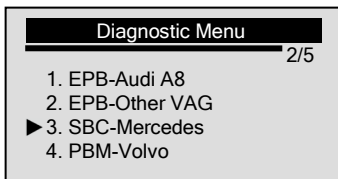
▲WARNING DO NOT operate the brake pedal until you are prompted to!

▲WARNING Make sure the central lock is deactivated!

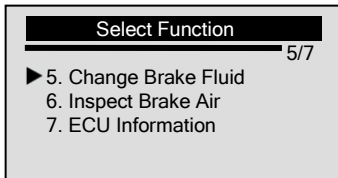
▲WARNING Use extreme caution during the whole bleeding process as the pressure of pump bleed screw will be up to 100 bar!

To change brake fluid:

1. Connect a charger to vehicle battery.
2. Prepare at least 2.0 liters of brake fluid and pour the liquid into brake fluid accumulator.
3. Connect the fluid accumulator to brake's master cylinder with the accumulator tube.
4. Plug the device to vehicle DLC and turn ignition on.
5. Use **UP/DOWN** button to select **SBC-Mercedes** from *Diagnostic Menu* and press **Y** button to confirm.

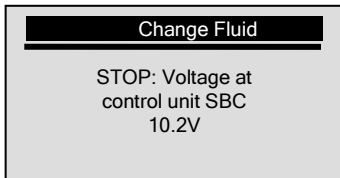


6. Use **UP/DOWN** button to select **Change Brake Fluid** from *Select Function* menu and press **Y** button.



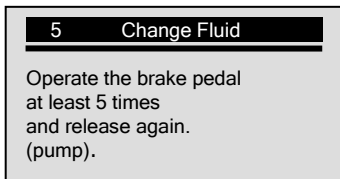
IMPORTANT To complete the brake fluid change process, make sure vehicle battery is fully charged and is in good condition. The brake tool keeps detecting battery voltage during the whole process. Once the voltage is too low to support the operation, a "STOP: Voltage at control unit SBC xx.xV" message indicating

battery low comes up as below:



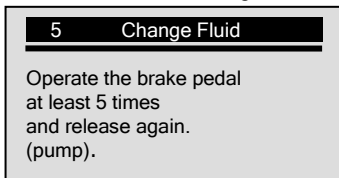
- √ If the voltage stays at a low level, the device is not able to proceed with the service work. So stop the service by holding **N** button for at least 1 second, and an "Operation failed!" message comes up.
- 7. Follow onscreen instructions to complete the first phase of operation:
 - Connect filling and bleeding unit.
 - Set pressure: 2.0-2.5 bar.
 - Wait until the pressure has built up.
 - Open bleeder screw at rear left brake caliper.
 - Hold bleeder hose tight.
- 8. If you wish to move to the second phase of operation, press **Y** button as instructed.
- √ If you do not wish to continue the service, press **N** button to exit, and an "**Operation failed!**" message comes up.
- √ You can exit the fluid change service at any phase of the operation with **N** button.
- 9. To complete the second phase of operation, do the following as instructed:
 - Turn off filling and bleeding equipment.
 - Wait until the pressure drops.
 - Disconnect filling and bleeding equipment.
- 10. Press **Y** button to move to next phase.
- 11. To complete the third phase, do the following as instructed:
 - Set pressure: 0.5bar.
 - Wait until the pressure has built up.
- 12. Press **Y** button to move to phase 4.

13. Following instructions on device screen to finish the fourth phase:
 - Reduce pressure at filling and bleeding unit to 0 bar.
 - Turn off filling and bleeding equipment.
 - Leave filling and bleeding unit connected.
 - Wait until the pressure drops.
 - If the filling and bleeding unit has a shutoff valve, close it.
 - Switch on filling and bleeding unit.
14. Press Y button to continue with phase 5.
15. Follow onscreen instructions to finish the fifth phase.
 - Set pressure: 2.0-2.5 bars.
 - If present, open shutoff valve for filling and bleeding unit.
 - Wait until the pressure has built up.
 - Hold bleeder hose tight.
 - The pressure at the bleeder screw is great than 100 bar!
16. Press Y button to continue.
17. Follow onscreen instructions to finish the sixth phase.
 - Close bleeder screw at rear right brake caliper.
 - Open bleeder screw at rear left brake caliper.
 - Hold bleeder hose tight.
18. Press Y button to continue.
19. Follow onscreen instructions to finish the seventh phase.
 - Close bleeder screw at rear left brake caliper.
 - Open bleeder screw at front left brake caliper.
 - Operate brake pedal at least 5 times and release again (pump).
 - Stop pumping once the brake fluid flows out free of bubbles.
 - Hold bleeder hose tight.
20. Press Y button to continue.
21. Wait a few seconds until following screen shows:

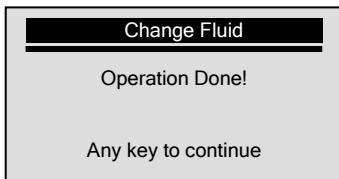


√ The number “x” on the upper left corner of screen indicates how many times you need to operate the brake pedal.

22. Operate the brake pedal at least 5 times as instructed.
23. Follow onscreen instructions to finish the eighth phase.
 - Hold bleeder hose tight.
24. Press Y button to continue.
25. Follow onscreen instructions to finish the ninth phase.
 - Close bleeder screw at front left brake caliper.
 - Open bleeder screw at front right brake caliper.
 - Operate brake pedal at least 5 times and release again (pump).
 - Stop pumping once the brake fluid flows out free of bubbles.
 - Hold bleeder hose tight.
26. Press Y button to continue.
27. Wait a few seconds until following screen shows:



28. Operate the brake pedal at least 5 times as instructed.
29. Follow onscreen instructions to finish the tenth phase.
 - Hold bleeder hose tight.
30. Press Y button to continue.
31. Follow onscreen instructions to finish the eleventh phase.
 - Close bleeder screw at front right brake caliper.
 - All bleeder screws are closed.
 - Brake system venting has been completed.
 - Set filling and bleeding unit pressureless.
 - Leave filling and bleeding unit connected.
32. Press Y button to continue and wait until the “**Operation Done!**” message shows:



√ If the operation is not carried out successfully, an “**Operation Failed!**” message shows. Repeat the process to try again.

33. Press any key or wait a few seconds to return.

5.3.2 Inspect Air

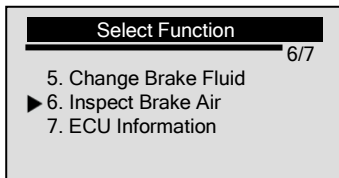
If brake system fails, only the front wheels are braked via a separate hydraulic circuit without brake servo assistance. The Inspect Brake Air is to ensure that no air is present in the separate hydraulic circuit.

IMPORTANT DO NOT operate the pedal until you are prompted to do; otherwise the service may not be completed.

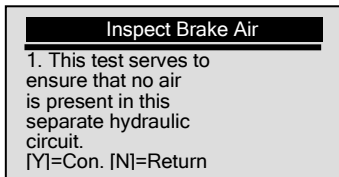
To inspect air:



1. Use **UP/DOWN** button to select **Inspect Brake Air** from **Select Function** menu and press **Y** button to confirm.



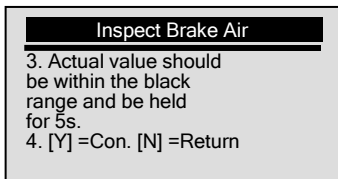
2. View onscreen prompts and press **Y** button to continue.



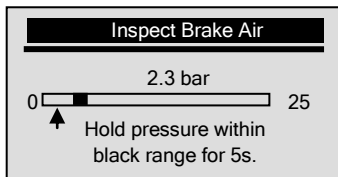
3. Follow onscreen instructions to finish the first phase of operation:
 - Pressure reservoir: check pretension pressure.
 - Actuation takes about 30s.
4. Press **Y** button or gently actuate and then release the brake pedal to continue.
 - √ If you do not wish to continue, press **N** button to exit and a “User Aborted!” message comes up.
 - √ You can exit the air inspection service at any phase of the operation with **N** button.
5. Wait a few seconds while the device is communicating with the vehicle. And follow onscreen instructions to finish the second phase of operation:
 - The brake system pressure reservoir is OK.
 - Check fill status of rear wheel brake circuits.
6. Press **Y** button or gently actuate and then release the brake pedal as instructed to continue.
7. Wait a few seconds while the device is communicating with the vehicle. And follow onscreen instructions to finish the third phase of operation:
 - Brake system fill status is OK.
 - Check fill status of pedal travel simulator.
8. Press **Y** button or gently actuate and then release the brake pedal as instructed to continue.
9. Use **UP/DOWN** button to view onscreen prompts.



prompt screen to be continued...

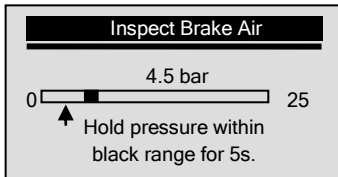


10. Press **Y** button to continue.



- √ The black block “■” in the screen indicates specified pressure range of current phase.

11. Operate the brake pedal gently to raise the pressure to 4.5-5.5 bar and hold it for 5 seconds as instructed.



- √ If the pressure can not reach the specified range for a long period, hold **N** button for about 2s to exit, and a “User Aborted!” message shows on the display.
- √ Whenever you operate the pedal too hard and the pressure is raised beyond the specified range of current phase, following screens come up prompting you to repeat the process to try again:

Inspect Brake Air

1. Brake pressure must not rise beyond the specified range!
2. Repeat the process.
3. Press [Y] or gently actuate and

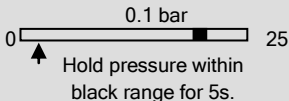
prompt screen to be continued...

Inspect Brake Air

- then release the brake pedal to continue.
4. [N]= Return.

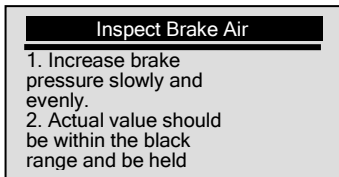
12. Continue to operate the pedal gently to increase the pressure to 9.5-10.5 bar and keep it for 5s.

Inspect Brake Air

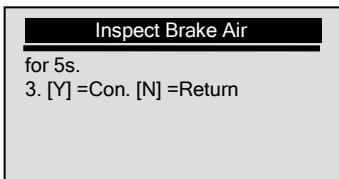


13. Keep operating the pedal to increase the pressure to 19.5-20.5 bar and hold it for 5s.
14. Follow onscreen instructions to finish current phase of operation:
 - Release brake pedal.
 - A strong brake pedal kickback indicates a fault.
 - Did brake pedal pulse weakly?
 - If YES, press [Y] or gently actuate and then release the brake pedal to continue.
 - If NO, press [N].

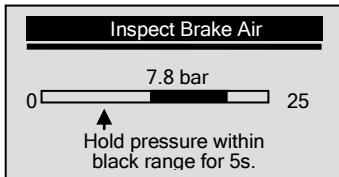
15. Press **Y** button or gently actuate and then release the pedal to continue, and the device starts to communicate with the vehicle.
16. Use **UP/DOWN** button to view onscreen prompts.



prompt screen to be continued...



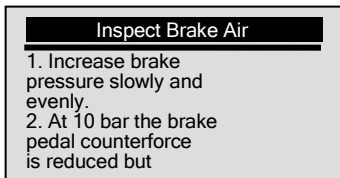
17. Press **Y** button and following screen shows:



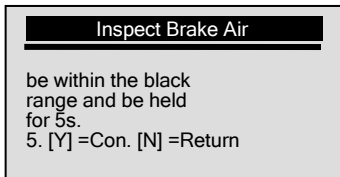
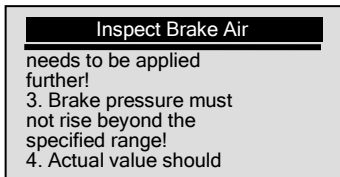
18. Actuate the pedal gently to raise the pressure to 10-20 bar and keep it for 5s.
19. Follow onscreen instructions to complete operation of current phase:
 - The fill level of the pedal travel simulator is in order.
 - Release brake pedal.
 - Check fill status of wheel brake circuit HZ2 (secondary brake

circuit).

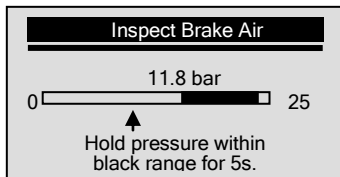
20. Press Y button or gently operate the pedal to continue, and the device starts to communicate with the vehicle.
21. Use UP/DOWN button to view onscreen prompts



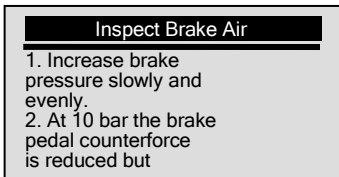
prompt screen to be continued...



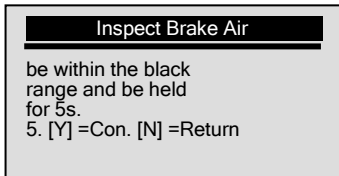
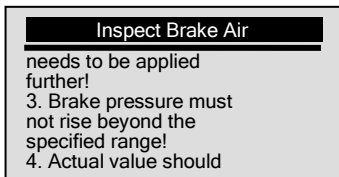
22. Press Y button and following screen shows:



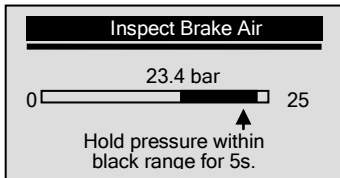
23. Actuate the pedal gently to raise the pressure to 20-24 bar and keep it for 5s.
24. Follow onscreen instructions to complete operation of current phase:
 - The fill level of wheel brake circuit HZ2 (secondary brake circuit) is in order.
 - Release brake pedal.
 - Checking fill status of wheel brake circuit HZ1 (primary brake circuit).
25. Press **Y** button or gently actuate and then release the pedal to continue, and the device starts to communicate with the vehicle.
26. Use **UP/DOWN** button to view onscreen prompts.



prompt screen to be continued...



27. Press **Y** button and following screen shows:

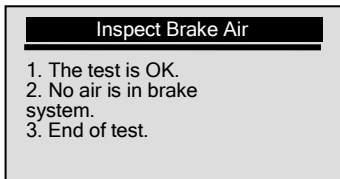


28. Actuate the pedal gently to raise the pressure to 20-24 bars and keep it for 5s.

29. Follow onscreen instructions to complete operation of current phase:

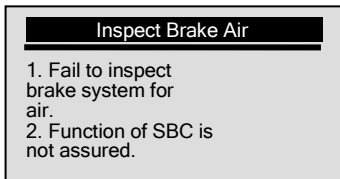
- The fill level of wheel brake circuit HZ1 (primary brake circuit) is in order.
- Release brake pedal.
- Brake system fill status is OK.

30. Press **Y** button or gently actuate and then release the pedal to complete the air inspection service. Depending on test results, one of the following screen shows:

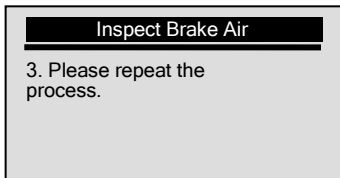


Inspect air completed screen

or



prompt screen to be continued...



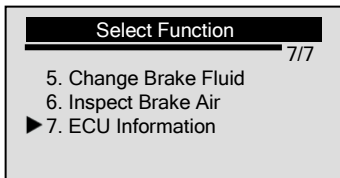
Inspect air completed screen

31. Press any key to return.

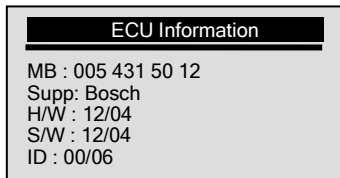
5.3.3 Retrieve ECU Information

To view ECU information

1. To retrieve ECU information, use **UP/DOWN** button to select **ECU Information** from *Select Function* menu and press **Y** button to confirm.



2. View retrieved information on device screen.



5.4 Diagnosis on PBM-Volvo

NT405 is designed to read/clear trouble codes, retrieve ECU

information, perform activation and service functions and reset clutch counter on Volvo vehicles that are equipped with PBM system.

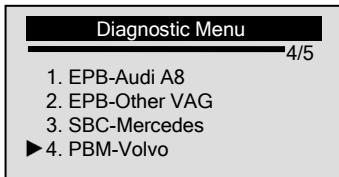
- √ For instructions on reading/erasing codes, please refer operation steps on page 23-28 in **5.1.2 Individual Functions**.

5.4.1 Retrieve ECU Information

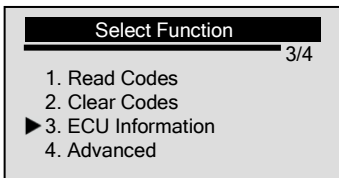
To view ECU information



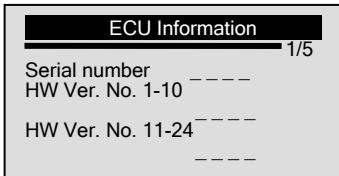
1. Use **UP/DOWN** button to select Use **UP/DOWN** button to select **PBM-Volvo** from **Diagnostic Menu** and press **Y** button to confirm.



2. To retrieve ECU information, use **UP/DOWN** button to select **ECU Information** from **Select Function** menu and press **Y** button to confirm.



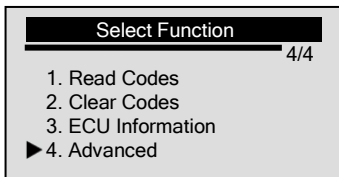
3. View retrieved information on device screen, and use the **UP/DOWN** key to view more information on next screens.



5.4.2 Advanced Functions

To perform advance functions

- ▶ 1. To retrieve ECU information, use **UP/DOWN** button to select **Advanced** from **Select Function** menu and press **Y** button to confirm.

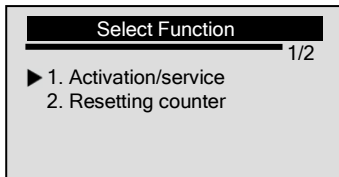


5.4.2.1 Activation/service

The **Activation/Service function** includes installation check that inspects if all mechanical components are correctly installed, applying parking brake, releasing parking brake, activating service mode and exiting service mode.

To perform activation/service work

- ▶ 1. Use **UP/DOWN** button to select **Activation/Service** from **Select Function** menu and press **Y** button to confirm.



2. View on-screen instruction and press **Y** button to continue.



- Use **UP/DOWN** key to view on-screen explanations about installation check, applying parking brake, releasing parking brake, activating service mode, exiting service mode and then press **Y** button to continue.
- Use **UP/DOWN** button to select a test and press **Y** button to start.



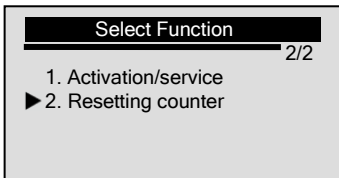
- To stop the test, use **UP/DOWN** button to select STOP and press **Y** button to return.

5.4.2.1 Resetting Clutch Counter

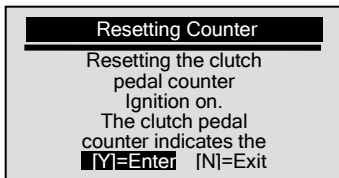
The clutch pedal counter indicates the number of times the control module has calculated an adjusted threshold value, which is used for automatic deactivation. The counter must be reset upon replacement of the clutch plate or the clutch pedal sensor. Resetting the counter enables to control module to more quickly calculate an adjusted value.

To reset clutch pedal counter

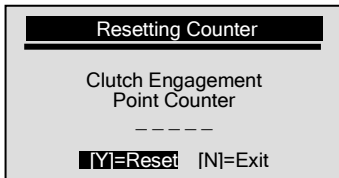
- Use **UP/DOWN** button to select **Resetting Counter** from **Select Function** menu and press **Y** button to confirm.



- Use **UP/DOWN** key to view on-screen explanations about resetting the clutch pedal counter and press **Y** button to continue.



3. View on-screen instruction and use **Y** button to reset the counter.



- ✓ To quit the test, just press the **N** button.

5.5 Diagnosis on EPB-Ford

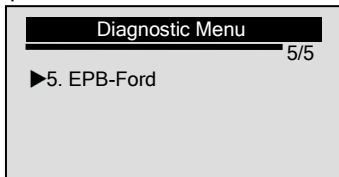
NT405 is designed to read/clear trouble codes, perform EPB calibration on Ford vehicles that are equipped with EPB system.

- ✓ For instructions on reading/erasing codes, please refer operation steps on page 23-28 in **5.1.2 Individual Functions**.

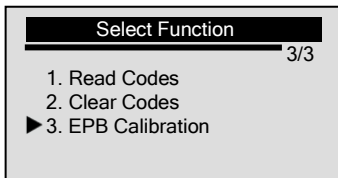
5.5.1 EPB Calibration

To perform EPB calibration

- ▶ 1. Use **UP/DOWN** button to select **EPB-Ford** from **Diagnostic Menu** and press **Y** button to confirm.



2. Use **UP/DOWN** button to select **EPB Calibration** from **Select Function** menu and press **Y** button to confirm.

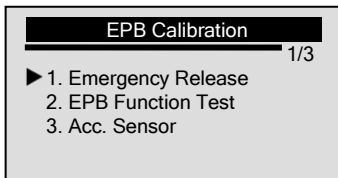


5.5.1.1 Emergency Release

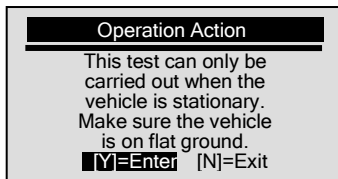
WARNING This test can only be carried out when the vehicle is stationary. Make sure the vehicle is on flat ground.

To perform emergency release test

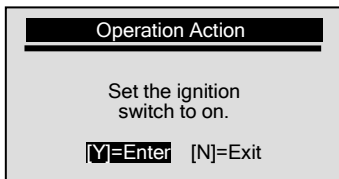
- ▶ 1. Use **UP/DOWN** button to select **Emergency Release** from **EPB Calibration** menu and press **Y** button to confirm.



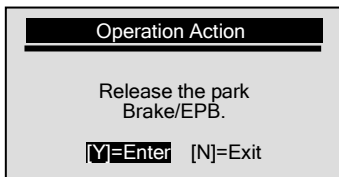
2. View on-screen explanation press **Y** button to continue



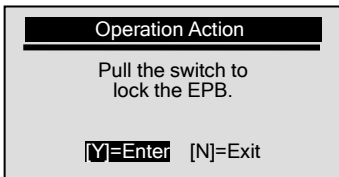
3. Turn ignition key to the ON position as instructed and then press the **Y** button to continue.



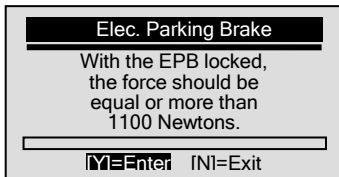
4. Release the park brake and press the **Y** button to continue.



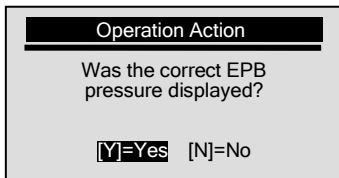
5. Pull the switch to lock the EPB and press the **Y** button to continue.



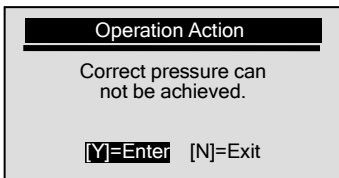
6. View on-screen instruction and press **Y** button to continue.



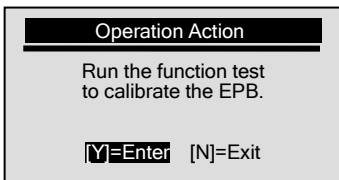
7. If correct EPB pressure displayed, press the **Y** button to continue.



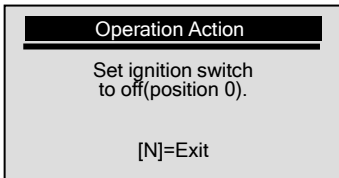
- √ If incorrect EPB pressure displayed, use **UP/DOWN** button to select **NO** and press the **Y** button to continue. And follow screen shows:



- √ View on-screen instruction and press the **Y** button to continue.

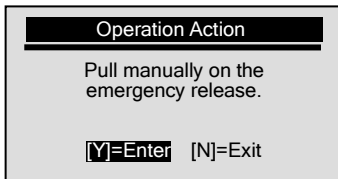


- √ Set ignition switch to off and press **N** button to exit.

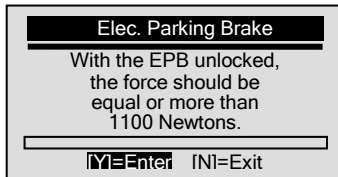


8. Pull manually on the emergency release and press **Y** button to

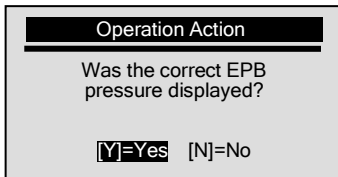
continue.



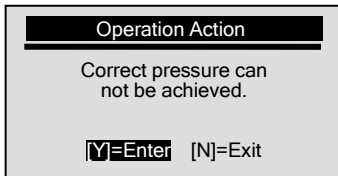
9. View on-screen instruction and press **Y** button to continue.



10. If correct EPB pressure displayed, press the **Y** button to continue.



√ If incorrect EPB pressure displayed, use **UP/DOWN** button to select **NO** and press the **Y** button to continue. And follow screen shows:



- √ View on-screen instruction and then press the **Y** button to continue.

Operation Action
Run the function test to calibrate the EPB.
Y =Enter [N]=Exit

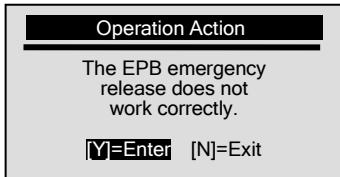
- √ Set ignition switch to off and press **N** button to exit.

Operation Action
Set ignition switch to off(position 0).
[N]=Exit

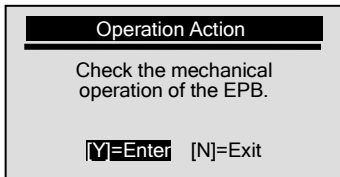
11. If the vehicle moves freely, press the **Y** button to continue.

Operation Action
Does the vehicle move freely?
Y =Enter [N]=Exit

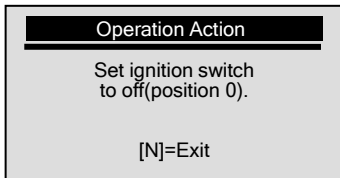
- √ If the vehicle does not move freely, use **UP/DOWN** button to select **NO** and press the **Y** button to continue. And follow screen shows:



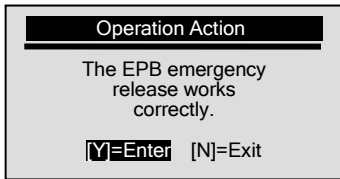
- √ View on-screen instruction and then press the **Y** button to continue.



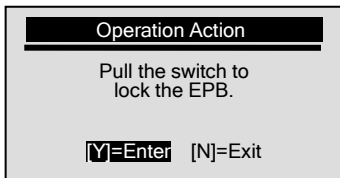
- √ Set ignition switch to off and press **N** button to exit.



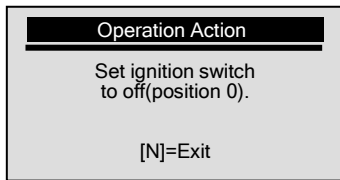
12. Press the **Y** button to continue.



13. Pull the switch to lock the EPB and press the **Y** button to continue.



14. Set ignition switch to off and press **N** button to exit.



5.5.1.2 EPB Function Test

The **EPB Function Test** removes the air-gan from the brake pads and test the EPB pressure.

WARNING This test can only be carried out when the vehicle is stationary. Make sure the vehicle is on flat ground.

WARNING Verify that the brake fluid level is correct.

To perform EPB function test

1. Use **UP/DOWN** button to select **EPB Function Test** from **EPB Calibration** menu and press **Y** button to confirm.

EPB Calibration

2/3

1. Emergency Release
- ▶ 2. EPB Function Test
3. Acc. Sensor

2. Use **UP/DOWN** button to view on-screen instructions and press **Y** button to continue.

Operation Action

This test can only be carried out when the vehicle is stationary. Make sure the vehicle is on flat ground.

[Y]=Enter [N]=Exit

prompt screen to be continued

3. Turn ignition key to the ON position as instructed and then press the **Y** button to continue.

Operation Action

Set the ignition switch to on.

[Y]=Enter [N]=Exit

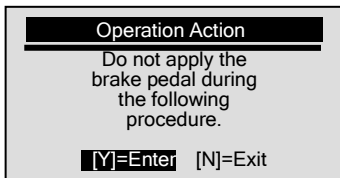
4. View on-screen explanation of the function and press the **Y** button to continue.

Operation Action

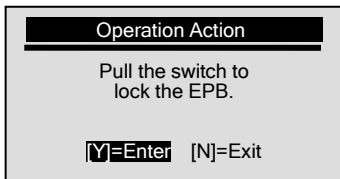
The following procedure will remove the air-gan from the brake pads and test the EPB pressure.

[Y]=Enter [N]=Exit

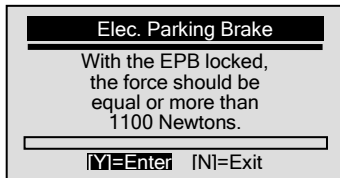
5. Follow on-screen instructions to complete this step and then press the **Y** button to continue.
 - Depress the brake pedal and HOLD pushing the switch to unlock/ release the EPB.
 - Release the brake pedal.
6. Follow on-screen instructions to complete this step and then press the **Y** button to continue.
 - Apply the brake pedal three times.
7. View on-screen instructions and then press the **Y** button to continue.



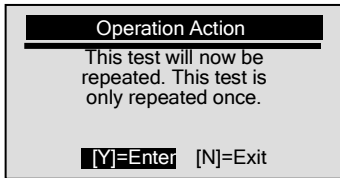
8. Pull the switch to lock the EPB and press the **Y** button to continue.



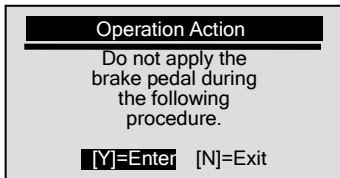
9. View on-screen instruction and press **Y** button to continue.



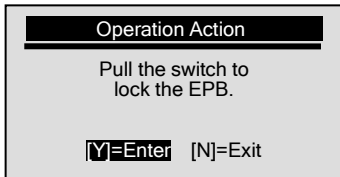
10. Follow on-screen instructions to complete this step and then press the **Y** button to continue.
- Depress the brake pedal and HOLD pushing the switch to unlock/ release the EPB.
 - Release the brake pedal.
11. View on-screen instructions and then press the **Y** button to continue.



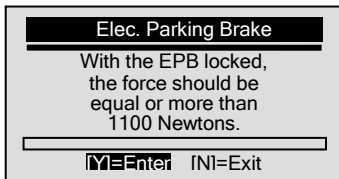
12. Follow on-screen instructions to complete this step and then press the **Y** button to continue.
- Apply the brake pedal three times.
13. View on-screen instructions and then press the **Y** button to continue.



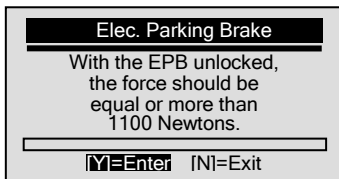
14. Pull the switch to lock the EPB and press the **Y** button to continue.



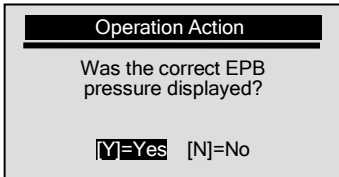
15. View on-screen instruction and press **Y** button to continue.



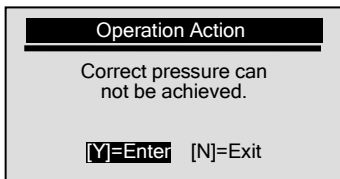
16. Follow on-screen instructions to complete this step and then press the **Y** button to continue.
- Depress the brake pedal and HOLD pushing the switch to unlock/ release the EPB.
 - Release the brake pedal.
17. View on-screen instruction and press **Y** button to continue.



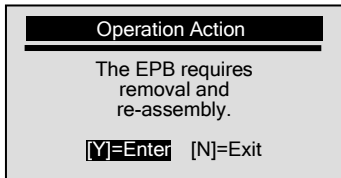
18. If correct EPB pressure displayed, press the **Y** button to continue.



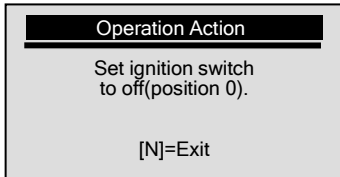
- √ If incorrect EPB pressure displayed, use **UP/DOWN** button to select **NO** and press the **Y** button to continue. And follow screen shows:



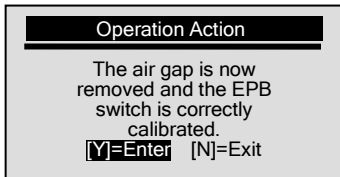
- √ View on-screen instruction and then press the **Y** button to continue.



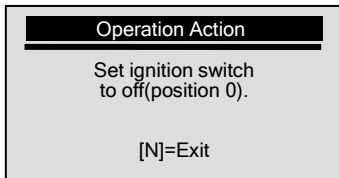
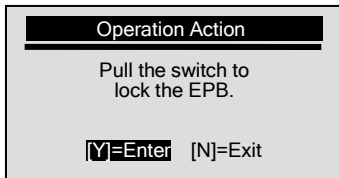
- √ Set ignition switch to off and press **N** button to exit.



19. View on-screen instruction and press **Y** button to continue.



20. Pull the switch to lock the EPB and press the **Y** button to continue.



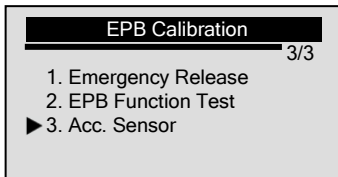
21. Set ignition switch to off and press **N** button to exit.

5.5.1.3 Acceleration Sensor Test

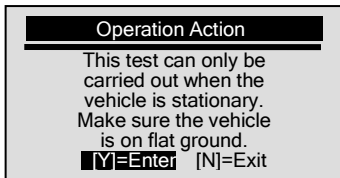
WARNING This test can only be carried out when the vehicle is stationary. Make sure the vehicle is on flat ground.

To perform acceleration sensor test

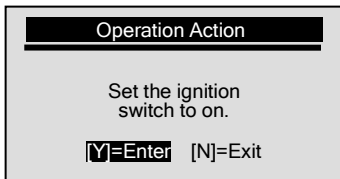
- ▶ 1. Use **UP/DOWN** button to select **Acc. Sensor Test** from **EPB Calibration** menu and press **Y** button to confirm.



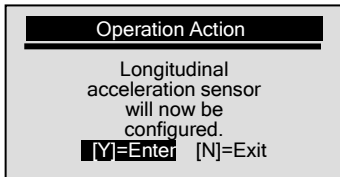
2. Use **UP/DOWN** button to view on-screen explanation press **Y** button to continue.



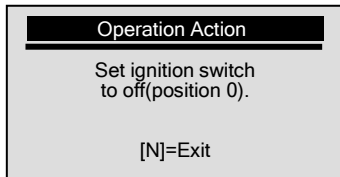
3. Turn ignition key to the ON position as instructed and then press the **Y** button to continue.



4. View on-screen information and press **Y** button to continue.



5. Set ignition switch to off and press **N** button to exit.



6. Update

NT405 is able to be updated to keep you stay current with the latest development of diagnosis. The update of NT405 consists of two parts: program upgrade and DTC upgrade.

√ To update NT405, you need following tools:

- NT405 EPB Service Tool
- Update Tool FoxLink
- PC or laptop with USB Ports and internet explorer
- USB cable

√ To be able to use update tool, PC or laptop must meet the following minimum requirements:

- Operation System: Win98/NT, Win ME, Win2000, Win XP, VISTA and Windows 7.
- CPU: Intel PIII or better
- RAM: 64MB or better
- Hard Disk Space: 30MB or better
- Display: 800*600 pixel, 16 byte true color display or better
- Internet Explorer 4.0 or newer

IMPORTANT Do not disconnect the EPB service tool from computer, or power off the computer during the process of updating.

To update program:



1. Download the update tool FoxLink and update files from our site www.foxwelltech.com by selecting Home>Updates>NT405 and save the applications and files in computer disk.
2. Unzip the update tool file. Follow instructions on computer screen to install the tool and driver.



3. Double click the desktop icon to launch the application.
4. Connect NT405 to computer with the USB cable provided, and the application detects NT405 automatically.
5. Use <Select File> button to locate update file downloaded.

Update Program

1. Connect device to computer with the USB cable supplied.
2. Click < Select File > to locate update file.
3. Click < Update > to start upgrading.



6. Click <Update> button to start updating.

To update DTCs

√ It may takes several minutes to update the DTCs.



1. Use <Select File> button to locate update file downloaded.

Update DTC

1. Connect device to computer with the USB cable supplied.
2. Click < Select File > to locate update file.
3. Press the DOWN key of your device.
4. Click < Update > to start upgrading.



2. Press the **DOWN** key and a “Connecting to PC” message shows on NT405’s screen.
3. Click <Update> button to start updating.