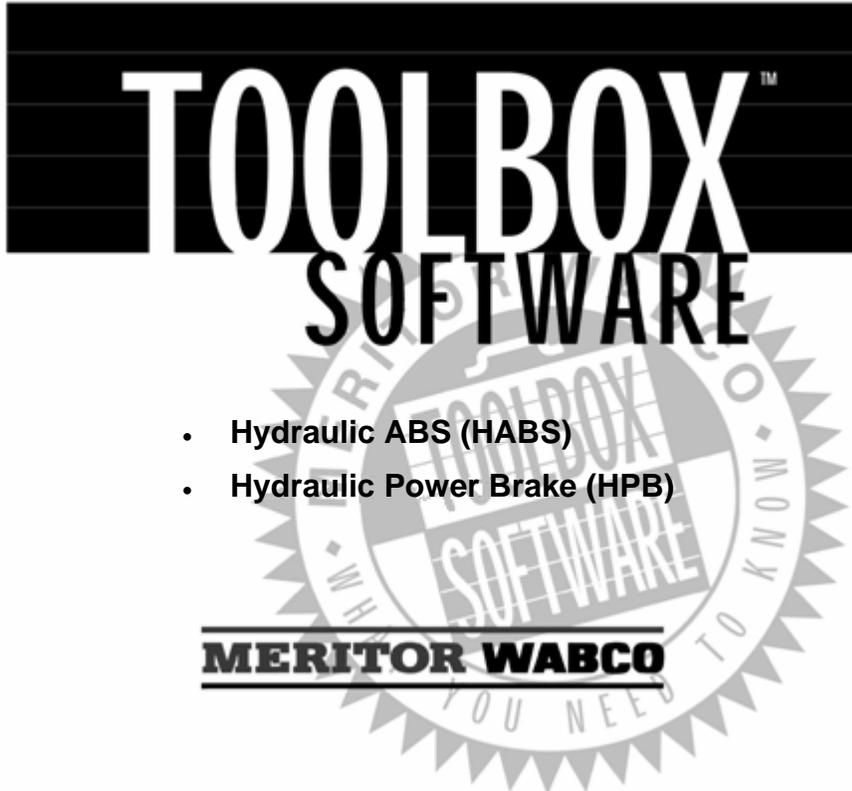


User's Manual



- Hydraulic ABS (HABS)
- Hydraulic Power Brake (HPB)

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Introduction

NOTE: WABCO TOOLBOX™ Software is used for diagnosing the Meritor WABCO Hydraulic ABS (HABS) and Hydraulic Power Brakes (HPB) systems on the Ford F650/F750 medium duty trucks. This user manual has been modified from its original version to reflect the usage of WABCO TOOLBOX™ on the Ford IDS system.

Meritor WABCO TOOLBOX™ Software provides diagnostic capabilities for Meritor WABCO tractor and trailer pneumatic ABS, hydraulic ABS, the electronic leveling module (ELM) for both tractor and trailer and Electronically Controlled Air Suspensions (ECAS) for buses. The program provides four basic functions:

- Displays both constant (e.g., ECU number) and changing (e.g., RPMs) information from the system under test.
- Displays both active and stored system faults, as well as the appropriate repair instructions.
- Provides a link to service information testing procedures, etc. (ABS and HABS only)
- Activates system components to verify system integrity, correct component operation and installation wiring.

NOTE: For complete Meritor WABCO maintenance information, refer to the appropriate maintenance manual which is listed in this manual at the beginning of each product section. For copies of Meritor WABCO service literature, contact the ArvinMeritor Customer Service Center at 800-535-5560 or visit our website: meritorwabco.com

Starting TOOLBOX™ Software

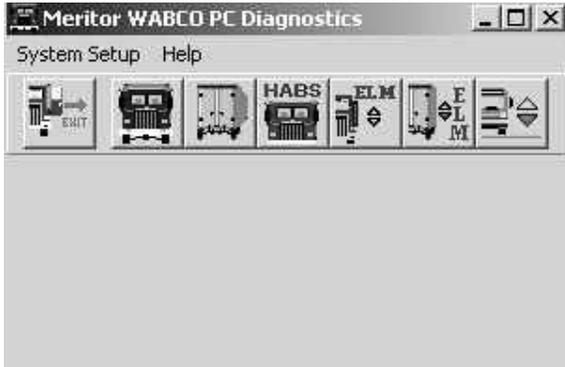
1. Attach the IC3COM or IC4COM cable to the IDS PC serial port.
2. Attach the diagnostic cable (Deutsch) to the vehicle.



3. From the IDS Desktop click on the MDTruck Launchpad to access the MDTruck diagnostic software.
4. From the Launchpad click on the "Wabco" button then the "Launch Wabco" button to start the TOOLBOX™ Software.



Main Menu



At the **Main Menu** you may select a shortcut icon to:



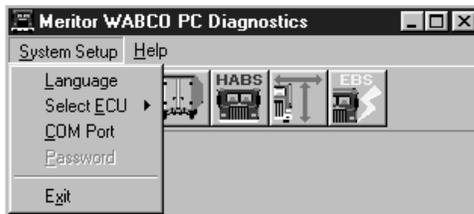
Exit TOOLBOX™



Go to Hydraulic ABS (HABS) diagnostics OR Go to Hydraulic Power Brake (HPB) diagnostics

System Setup

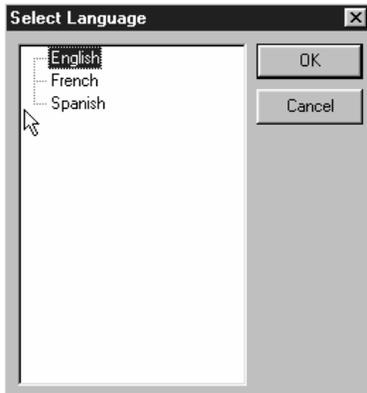
Select **System Setup** from the **Main Menu**.



Language

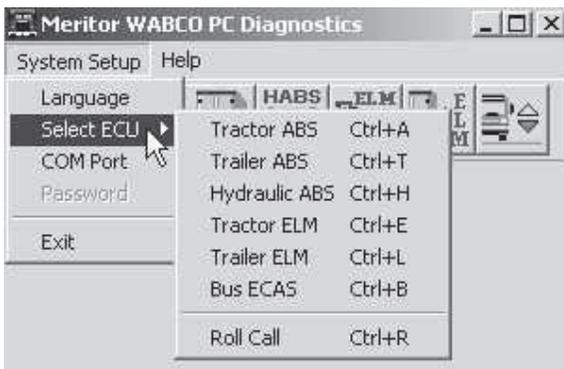
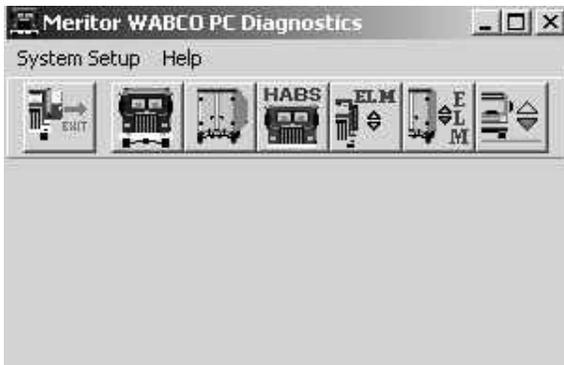
Select **Language** from the **System Setup** menu. The default is English. To change the default to French or Spanish (ABS only):

1. Select the appropriate language.
2. Click OK to accept the selection.



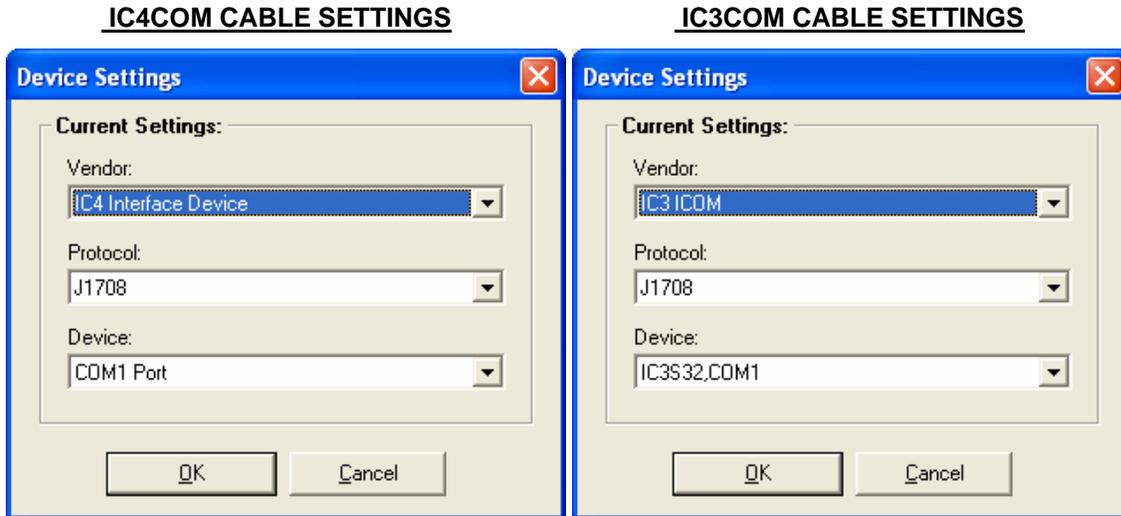
Select ECU

Select ECU from the System Setup menu, then select **Hydraulic ABS** or select the Hydraulic ABS (**HABS**) icon from the main menu.



COM Port

From the **System Setup** pull down menu, select **COM Port** to display the **Device Settings** menu. Current settings will be shown.



Vendor

Click on the down arrow for a list of **vendor** choices. Select the appropriate vendor.

Protocol

Click on the down arrow for the **protocol** choices.

Device

Click on the down arrow for the **device** choices. Select the device and port to which the data cable is connected.

Click OK to accept the selections and close the **Device Settings** window.

Help



Select the **Help** icon for help in using Meritor WABCO TOOLBOX™ Software. Help is accessible from all TOOLBOX™ pages. Search by title (**contents**) or type in a specific topic (**search for help on**).

System Information

Select **System Information** and follow the screen prompts to print a report of system hardware: operating system version, drivers, etc. Run this report whenever you contact the ArvinMeritor Customer Service Center.



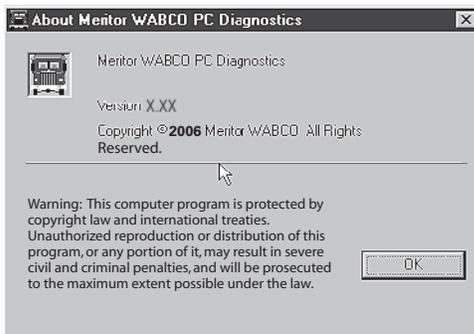
Update Application

(Versions 5.0 and Higher)

WABCO TOOLBOX™ Software should always be installed from the IDS DVD or from the Ford PTS or Motorcraft websites. This will ensure that the version installed has been validated on the F650/F750 medium duty trucks.

About

Select **About** from the pull down menu for information about Meritor WABCO TOOLBOX™ Software, including the version number. You may need this information if you call the ArvinMeritor Customer Service Center.



Hydraulic ABS

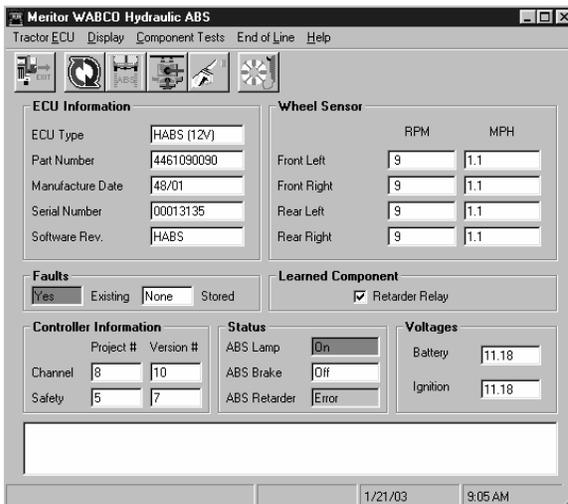


NOTE: TOOLBOX™ Software must be connected to the vehicle and the vehicle ignition must be ON in order to display information.

HYDRAULIC ABS MENUS AND TOOLBARS

Select **Hydraulic ABS** from the **TOOLBOX™ Main Menu**. TOOLBOX™ will recognize the HABS or Hydraulic Power Brake (HPB) ECU and display the appropriate screen. If you are working with HPB, refer to the HPB section of this manual.

Main Menu



The **Main Menu** provides icons and pull down menu task selections. It also provides information about the current status of Meritor WABCO HABS.

ECU information is read once from the ECU and does not change. All other information (e.g., wheel sensors, voltages and fault information) is read and updated continuously.

NOTE: Double click on Yes in the Existing or Stored Faults fields of the **HABS Main Menu** to bring up the Fault Information screen. Service Information may also be observed from this screen.

From the **Main Menu**, you can select **Restart**, **Exit** or **Help**.

Restart Exit Help



Tractor ECU

Select **Tractor ECU** from the **HABS Main Menu**. A pull down menu will appear.



Language Restart

Refer to page 7 of this manual for information about using the **Language** selection.

Select **Restart** to refresh (update) ECU information.

Exit

Select **Exit** to exit HABS and return to the TOOLBOX™ **Main Menu**.

Display

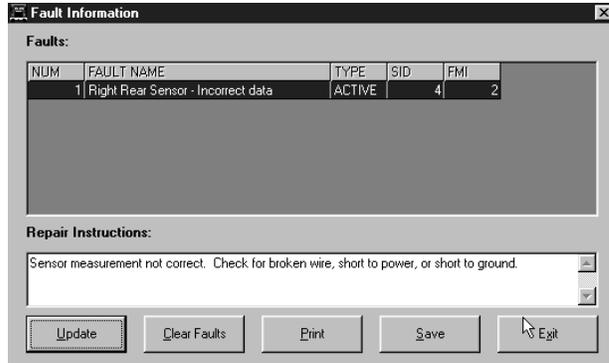
Select **Display** from the **HABS Main Menu**. A pull down menu will appear.



Faults

Select **Faults** to display the **Fault Information** screen.

NOTE: The **Fault Information** Screen is also accessible from the **HABS Main Menu**.



The **Fault Information** screen contains a description of each fault, including the type of fault (Active or Stored), SID and FMI number. Repair instructions for the fault appear at the bottom of the screen.

For detailed repair instructions, click on the fault to display a troubleshooting information sheet. **Bookmark** and **Thumbnail** tabs at the side of the troubleshooting information sheet provide additional information. A sample troubleshooting information sheet appears in the Appendix. This screen also provides a link to the appropriate system schematic.

- Bookmarks — Complete listing of ABS fault codes by SID/FMI. Click to display.
- Thumbnails — Click individual pages to display.

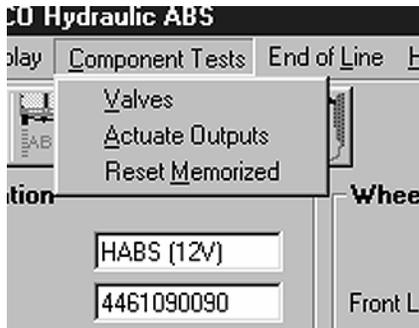
Faults that occur after the screen is displayed will not appear until a screen update is requested. Use the **Update** button at the bottom of the screen to refresh the fault information table and display a new list of faults.

After making any required repairs, use the **Clear Faults** button to clear the fault. Clear each fault as it is repaired.

Use the **Save** or **Print** button to save or print the fault information data. Select **Exit** to close this screen.

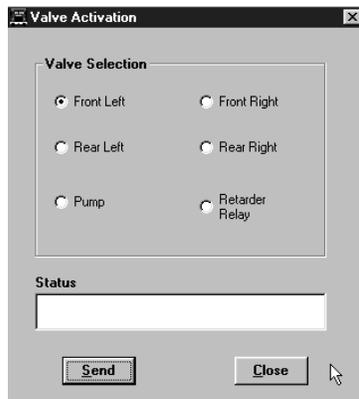
Component Tests

Select **Component Tests** from the **HABS Main Menu**. A pull down menu will appear.



Valves

Select **Valves** to display the **Valve Activation** screen.



The **Valve Activation** screen lets you activate the four valves, the pump and the retarder relay. In addition to checking for correct activation, this screen provides an easy way to make sure the valves are wired correctly — and that wiring is not reversed.

Click on the valve, pump or retarder relay you wish to test, then click on the **Send** button to actuate the component. Component activation status appears in the **status box** field. Use the **Close** button to close this screen.

Actuate Outputs

Select **Actuate Outputs** to display the **Actuate Miscellaneous Output** screen.

The screenshot shows a software window titled "Actuate Miscellaneous Output". Inside, there is a section labeled "Output Selection" containing a grid of radio buttons for various components: Front Left Inlet (selected), Front Right Inlet, Front Left Outlet, Front Right Outlet, Rear Left Inlet, Rear Right Inlet, Rear Left Outlet, Rear Right Outlet, Pump Relay, Retarder Output, ABS Lamp On, ABS Lamp Off, and Valve Relay Off. Below the selection area is a "Status" label followed by an empty text input field. At the bottom of the window are two buttons: "Send" and "Close".

This screen provides a check of the ABS indicator lamp. In addition, it provides a way to check either inlet or outlet activity of the valves, pump or retarder relay.

Click on the component you wish to test, then click on the **Send** button to actuate the component. Component activation status appears in the **status box** field. Use the **Close** button to close this screen.

Reset Memorized

Select **Reset Memorized** to display the **Learned Component** screen.

The screenshot shows a software window titled "Learned Component". It features a "Component" label and a list of components. The "Relay" component is checked with a checkbox.

Relay is an automatic default and cannot be de-selected. It indicates the ECU has memorized the installed retarder relay. Once the ECU has seen a retarder, it expects to see it every time the vehicle is powered up.

Because there are times when an ECU is moved to another vehicle — or during diagnostic testing — you may want the ECU to disregard this learned component. Use the **Reset Memorized** command for this purpose.

End of Line

NOTE: Before connecting the vehicle to the computer, bleed the circuit and master cylinder. Follow the standard bleed procedures used by your facility, or use the procedures listed in the F650/F750 Workshop Manual.

WARNING

Failure to bleed the system whenever any hydraulic system fitting is loosened or disconnected will allow air to remain in the system. This will prevent the hydraulic pressure in the brake system from rising enough to apply the brakes correctly. This will cause the stopping distance to increase and can result in serious personal injury.

Correctly discard hydraulic brake fluid that is removed from the brake system. Hydraulic brake fluid that is removed can be contaminated and can cause damage, loss of braking and serious personal injury.

Use only the type of hydraulic brake fluid specified by the equipment manufacturer. Do not use or mix different types of hydraulic brake fluid. The wrong hydraulic brake fluid will damage the rubber parts of the brake caliper and can cause damage, loss of braking and serious personal injury.

Do not let the brake master cylinder fluid get below the minimum level during the bleeding operation. Keep the master cylinder reservoir filled with new DOT-approved brake fluid, as specified by the original equipment manufacturer. Failure to keep the brake reservoir level above minimum could result in more air entering system, making it impossible to effectively bleed the system.

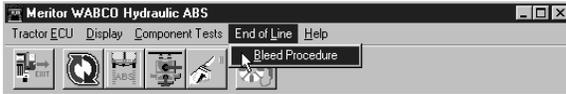
NOTE: Use DOT 3 or DOT 4 hydraulic brake fluid. Refer to the vehicle specifications to determine which fluid to use.

CAUTION

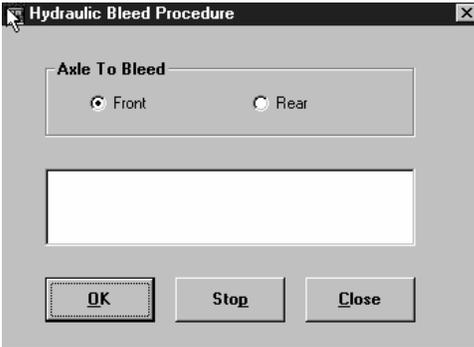
Hydraulic brake fluid is a caustic substance. Contact with hydraulic brake fluid can cause skin irritation. Do not let hydraulic brake fluid touch any painted surfaces, as it will remove the paint. Hydraulic brake fluid may also damage certain non-metal surfaces. Do not let fluid get on brake pads, shoes, rotors or disks.

1. Apply the parking brake and block the tires. Turn the ignition off.
2. Perform brake bleed procedure for wet module, bleeding the circuit and master cylinder if required, prior to connecting laptop to truck.
3. Connect the IDS laptop to the vehicle using the 9 pin (Deutsch) diagnostic connector in the cab of the truck.
4. Launch Meritor WABCO TOOLBOX™ Diagnostic Software.
5. From the **Main Menu** select the HABS icon.
6. Select **End of Line** from the **HABS Main Menu**.

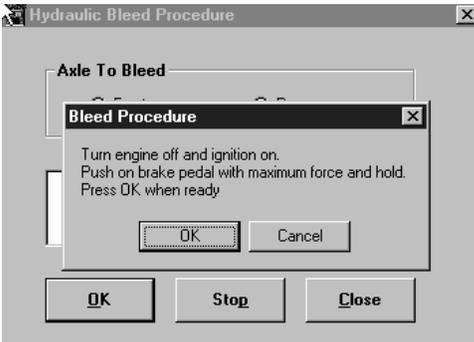
7. Select **Bleed Procedure** from the **End of Line Menu**.



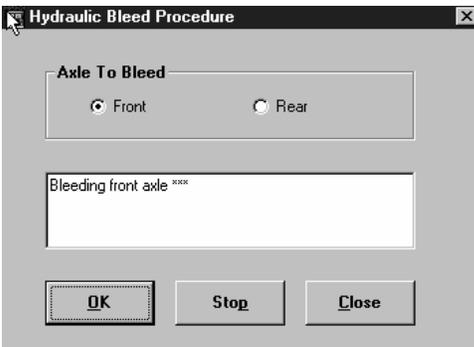
8. Choose axle to bleed from the select axle screen.



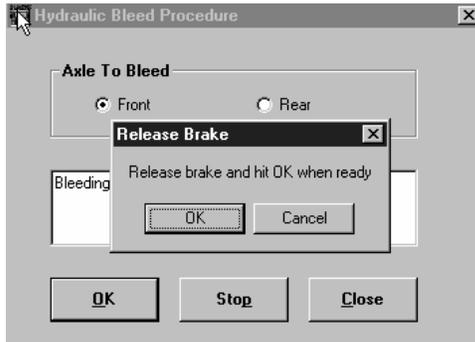
9. Follow on-screen prompts.



Click OK to continue.



Click OK to continue.



10. Repeat procedure two additional times on this axle. This should eliminate all of the air in the chamber.
11. Perform manual bleed on this axle.
12. Repeat Steps 8-11 for the other axle.
13. Test drive the vehicle after bleeding the brakes.
 - If a firm brake pedal resistance is felt and the brake pedal pushes back when you perform an ABS stop, the system bleed procedure is complete.
 - If there is no firm pedal resistance, check the brake system for defects (leaks, etc.) and make the necessary repairs, then repeat the bleed procedure.

Hydraulic Power Brake (HPB)

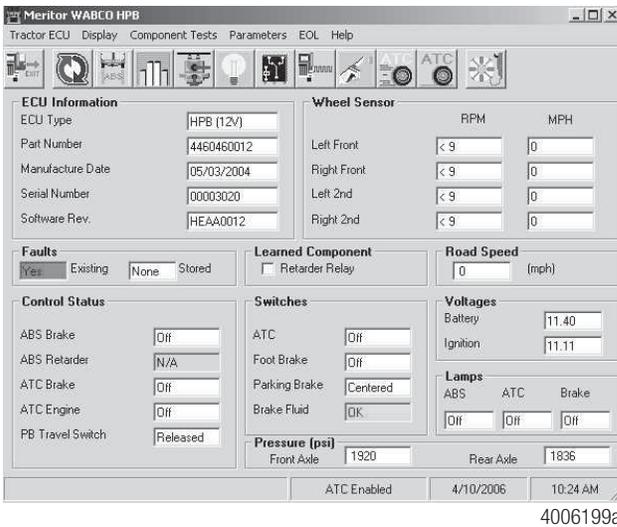


NOTE: TOOLBOX™ Software must be connected to the vehicle and the vehicle ignition must be ON in order to display information.

HYDRAULIC POWER BRAKE MENUS AND TOOLBARS

Select **Hydraulic ABS** from the **TOOLBOX™ Main Menu**. TOOLBOX™ will sense the type of ECU being used and will display the **HPB Main Menu**.

Main Menu



This screen provides icons and pull down menu task selections. It also provides information about the current status of Meritor WABCO HPB.

ECU information is read once from the ECU and does not change. All other information (e.g., wheel sensors, voltages and fault information) is read and updated continuously.

From the Main Menu you can select **Restart**, **Exit** or **Help**.

Restart Exit Help



Tractor ECU

Select **Tractor ECU** from the **HPB Main Menu**. A pull down menu will appear.



Language

Refer to page 7 of this manual for information about using the Language selection.

Restart

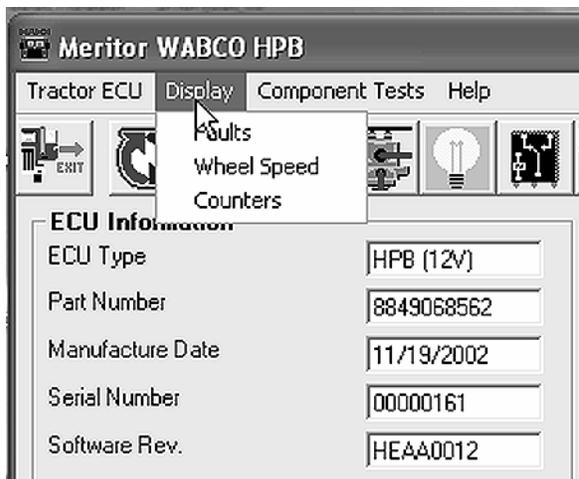
Select **Restart** to refresh (update) ECU information.

Exit

Select **Exit** to exit HPB and return to the TOOLBOX™ **Main Menu**.

Display

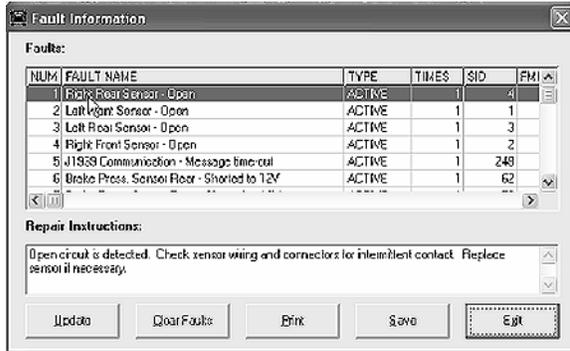
Select **Display** from the **HPB Main Menu**. A pull down menu will appear.



Faults

Select **Faults** to display the **Fault Information** screen.

NOTE: The **Fault Information** screen is also accessible from the **HPB Main Menu**.



The **Fault Information** screen contains a description of each fault, including the type of fault (Active or Stored), SID and FMI number. Repair instructions for the fault appear at the bottom of the screen.

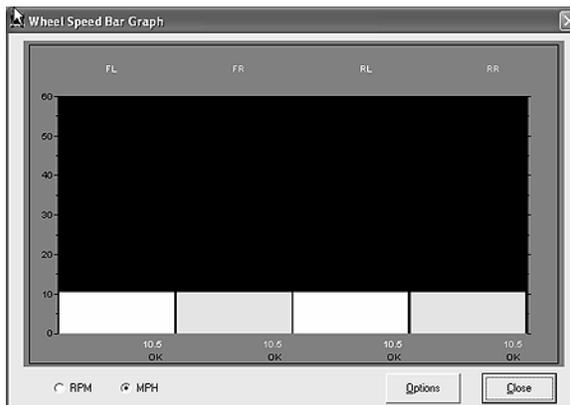
Faults that occur after the screen is displayed will not appear until a screen update is requested. Use the **Update** button at the bottom of the screen to refresh the fault information table and display a new list of faults.

After making any required repairs, use the **Clear Faults** button to clear the fault. Clear each fault as it is repaired.

Use the **Save** or **Print** button to save or print the fault information data. Select **Exit** to close this section.

Wheel Speed

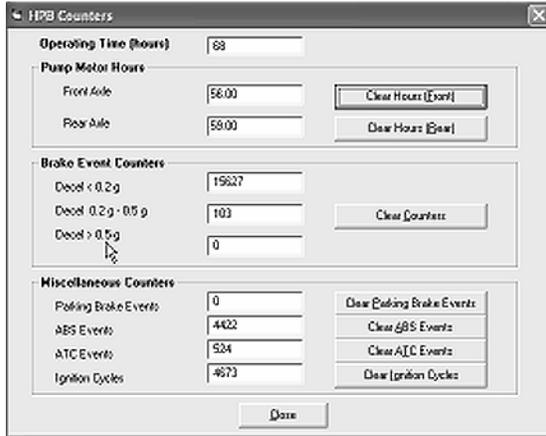
Select **Wheel Speed** to display the **Wheel Speed** screen.



Use the **Wheel Speed** screen to verify that sensors are connected at each wheel. Speed at a sensed wheel (FL, FR, RL, RR) indicates sensors are installed, but does not verify correct sensor installation.

Counters

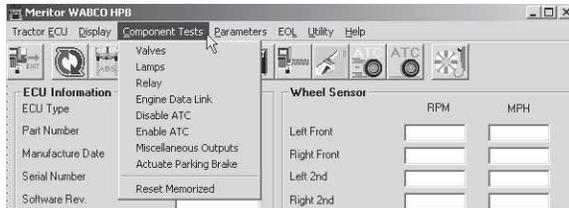
Select Counters to display the **Counters** screen.



The **Counters** screen provides an overview of HPB component performance (pump hours, brake events, etc.) as well as general vehicle activity such as ignition cycles. Occurrences displayed on this screen accumulate until the Clear button is selected.

Component Tests

Select **Component Tests** from the **HPB Main Menu**. A pull down menu will appear.



Valves

Select **Valves** to display the **Valve Activation** test screen.

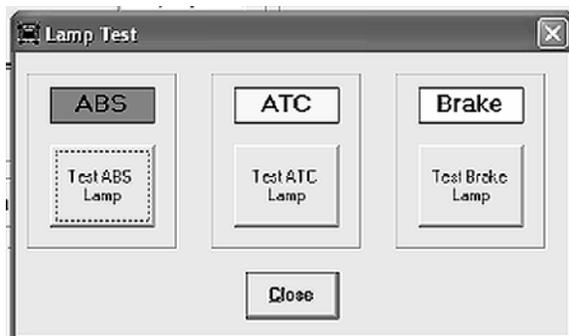


The Valve Activation test screen lets you activate the HPB valves and verify correct brake line installation.

Click on the valve you wish to test, then click the **send** button to actuate the component. Component activation status appears in the **Status** box field. Select **Close** to exit this screen.

Lamps

Select **Lamps** to display the **Lamp Test** screen.



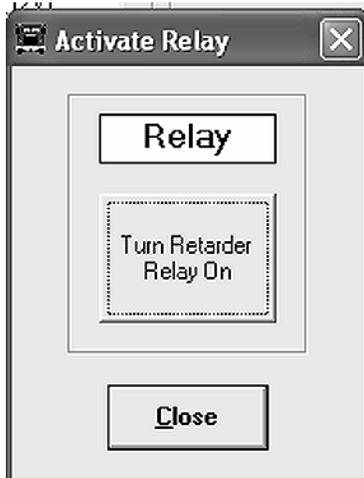
As each lamp is tested, check the actual lamp to verify correct operation. Select **Close** to exit this screen.

WARNING

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

Relay

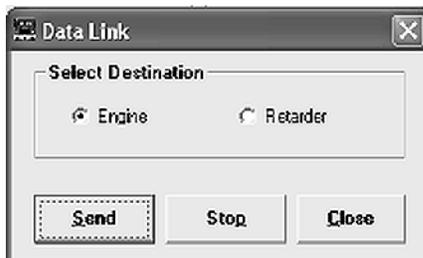
Select **Relay** to display the **Activate Relay** test screen.



This screen allows you to turn the Retarder Relay on or off. This is helpful in verifying correct operation, installation and wiring of the unit under test. Select **Close** to exit this screen.

Engine Data Link

Select Engine Data Link to display the **Data Link** test screen.



This screen allows you to send a “limit engine torque” command to the engine or a “disable retarder” command to the retarder.

Select the data link destination (engine or retarder), then select **Send** to test. Use the **Stop** button to end testing. Select **Close** to exit this screen.

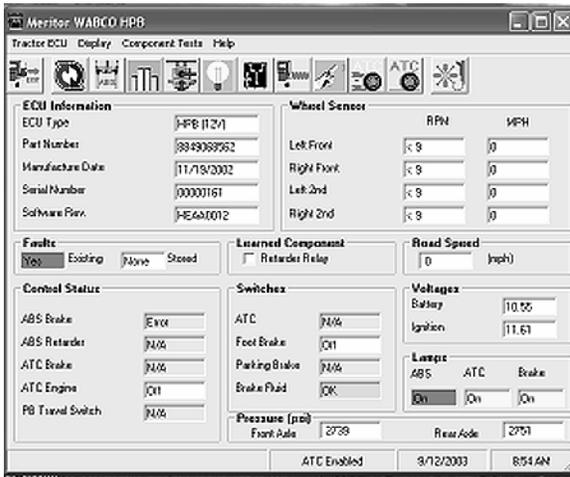
Disable ATC

Select Disable ATC to send a command to the ECU to disable automatic traction control. ATC will remain disabled until the enable command is sent, or until the vehicle ignition is cycled. ATC must be disabled for ATC testing.

Enable ATC

Select Enable ATC to send a command to the ECU to enable automatic traction control. This is the normal state of the ECU.

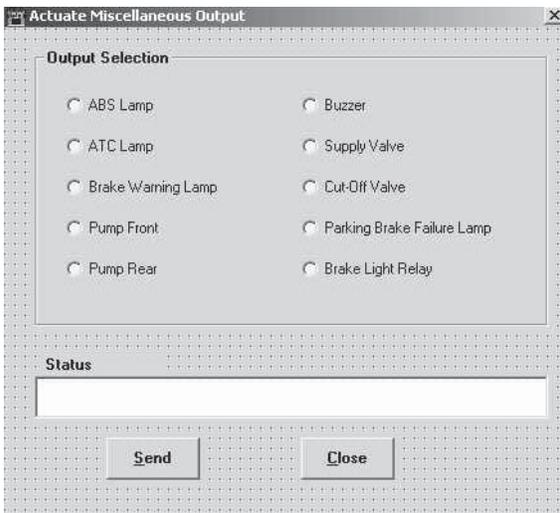
NOTE: The status bar on the **HPB Main Menu** reflects the current ATC status (enabled, disabled or not available).



Miscellaneous Outputs

Select Miscellaneous Outputs to display the Activate Miscellaneous Outputs test screen.

NOTE: Use TOOLBOX™ to test the following components: **Retarder Relay, Brake Light Relay, Supply Valve, Cut-Off Valve, ABS Lamp, Traction Lamp, Brake Warning, Pump Front, Pump Rear, Buzzer.**



This screen provides a check of several HPB components, as well as a way to check either inlet or outlet activity of the valves, pump or retarder relay.

Highlight the component you wish to test, then select the **Send** button to actuate the component. Component activation status appears in the **Status Box** field. Select **Close** to exit this screen.

Actuate Parking Brake

Select **Actuate Parking Brake** to display the **Parking Brake** test screen.



Select **Release** or **Apply**, then select **Send** to test the parking brake. Select **Close** to exit this screen.

Reset Memorized

(For Systems Equipped with a Retarder Relay)

Select **Reset Memorized** to display the **Learned Component** screen.



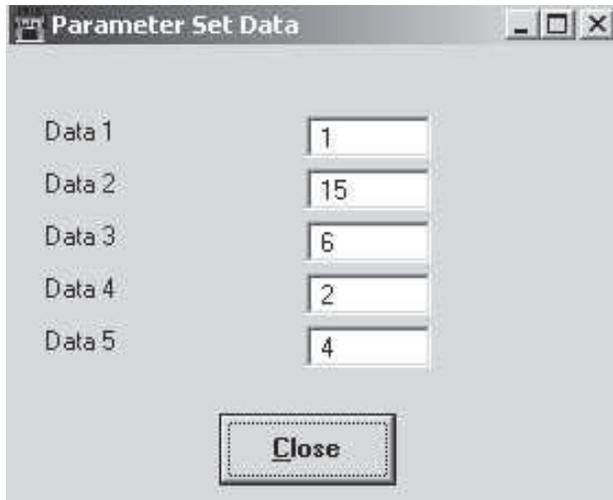
Relay is an automatic default and cannot be de-selected. It indicates the ECU has memorized the installed retarder relay. Once the ECU has seen a retarder, it expects to see it every time the vehicle is powered up.

Parameters

Select **Parameters** from the **HPB Main Menu**. A pull down menu will appear.



Select **Read Parameters** or **Write Parameters**. The **Parameters** screen will appear.



Read Parameters Write Parameters

Please contact the ArvinMeritor Customer Service Center at 800-535-5560 for information about using these screens.

End of Line

Select **End of Line** from the **HPB Main Menu**. A pull down menu will appear.

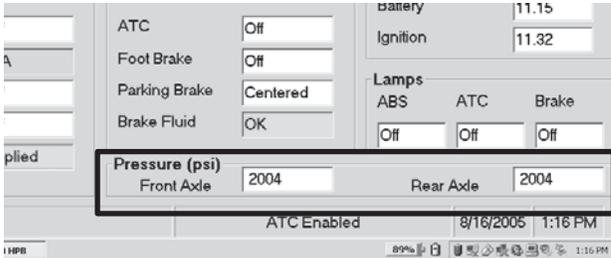


Drain Reservoir

This option sends a command to drain the HCU reservoir. For information about using this option, please contact the ArvinMeritor Customer Service Center at 800-535-5560.

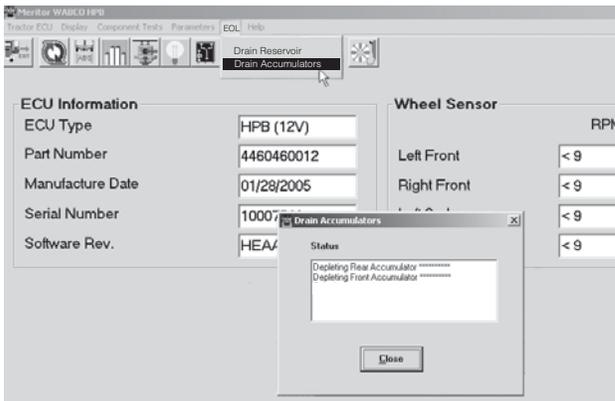
Deplete Accumulators

Before selecting **Deplete Accumulators** from the **HPB Main Menu**, make sure the accumulators are fully charged, approximately 2100 psi (144.79 bar). Review the **Pressure** field of the **HPB Main Menu** to verify pressure.

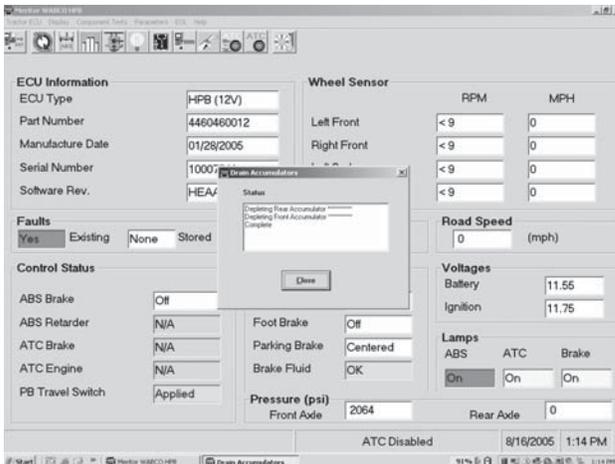


Select **Deplete Accumulators** from the pull down menu. A status message screen will appear. When the system pressure has been depleted from both the front and rear accumulators, the message screen will indicate the procedure has been completed.

(Depleting Accumulators)



(Complete)



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