A NAVISTAR COMPANY

International® ProStar™ Series Electrical System

Study Guide
TMT-080706

INTERNATIONAL®

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International® ProStar™ Series Electrical System
TMT-080706

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Introduction

Welcome to the International® ProStar™ Electrical program. This comprehensive DVD, along with a proven certification program, provides technicians and dealers with all the expertise needed to effectively service and maintain International® ProStar™ electrical systems.

This program covers electrical components and features that are unique to the International® ProStar™. For in-depth training that includes electrical diagnostics, testing and repair, please refer to the Electrical System Series DVDs.

To receive credit for completing this program, you are required to take a post-test on ISIS®/Education/Service/Online Testing.

Objectives

Upon completion, you will be able to:

- **Identify the benefits of a multiplexed electrical system.**
- **Identify the major electrical components of the International® ProStar™.**
- **Describe the features of the optional Vehicle Information Display.**

NOTES

System Operation Module I

In this module, we will discuss the features that make the International® ProStar™ electrical system unique and how these features work.

Diamond Logic® Electrical System

The International® ProStar™ uses the Diamond Logic® Electrical System. Road-ready components are integrated with computer technology and multiplexed wiring.

The Diamond Logic® system also provides computer controlled monitoring features that improve safety and simplify maintenance. Multiplexing the electrical system allows for an overall reduction of wires and connections as well as improved harness routing and clipping. Multiplexing also promotes equipment integration. It includes self-diagnostics and offers many electrical feature options.

"Multiplexing the electrical system allows for an overall reduction of wires and connections."

Multiplexing

The central components of the International® ProStar™ multiplexed electrical system are housed in the cab. This program gives you an overview of how the Body Controller, Antilock

Brake System Controller and the Power Distribution Center, as well as various other components, work together in the electrical system.

For more information on how multiplexing works, refer to the DVD training program entitled “An Introduction to Diamond Logic® Electrical System Service”.

The two foundational components on the International® ProStar™ multiplexed electrical system are the Body Controller and the wires that connect it to the rest of the system.

“The Body Controller directs current to the different components using multiplexed electrical wiring.”

The Body Controller directs current to the different components using multiplexed electrical wiring, as compared to the previous wiring systems that used a direct path for battery current to every switch and every component.

Communications Network

Datalinks are wires that connect the Body Controller to the rest of the electrical system. There are two J1939 datalinks on the International® ProStar™: one for the Powertrain and one for the Body Builder.

The Powertrain datalink provides a path for communication between the Body

Controller and the controllers for the engine, transmission, Antilock Brakes, or ABS, the auxiliary gauges, switch packs and the instrument panel.

The Body Builder datalink provides a path for communication between the Body Controller and the remote air solenoids.

There are also two J1708 datalinks: the Switch and ATA datalinks.

The Switch datalink allows communication between the Body Controller and the instrument panel switches and door pods.

The ATA datalink is used for communication between an electronic service tool and the system controllers.

NOTES

System Components

Module II

This module covers International® ProStar™ electrical components and how they are different or similar to those found on other International® vehicles.

Wiring

As with most International® vehicles, the International® ProStar™ uses an alphanumeric system to identify wiring circuits.

"The International® ProStar™ uses an alphanumeric system to identify wiring circuits."

Use the electrical circuit diagrams on ISIS® to decode the letters and numbers on the wiring. The letter identifies the location on the vehicle while the number identifies the specific circuit.

Electrical symbols are also used in these diagrams. Some of these include the fuse, LED, resistor, relay and magnetic sensor.

For more information on the alphanumeric wiring system used by International®, refer to the Wiring program within the Electrical Systems Series: Basics DVD.

Body Controller

"The Body Controller is the brain of the International® ProStar™ electrical system."

The Body Controller is the brain of the International® ProStar™ electrical system and is located behind the left kick panel. It replaces the ESC used in pre-2007 vehicles. The Body Controller has more inputs and outputs than the ESC and provides SAE-compliant fault code reporting.

The Body Controller monitors and controls the system and distributes electrical current to components.

System monitoring and control is accomplished by communication with controllers and components.

Optional Modules

Optional modules may be located behind the lower console. These may include the load shedding, telematics, and tire pressure.

Power Distribution Center (PDC)

The Power Distribution Center, or PDC, on the ProStar™ is in the same location as on other International® vehicles such as the 8500 and 8600, now known as the TranStar™ series. It also features the same circuit breakers, fuses and

fuse blocks, but has new end blocks. It also features new, smaller relays. All fusing is in one location, except with sleeper models, which have a separate fuse block for the sleeper itself.

Instrument Cluster

The Instrument Cluster of the International® ProStar™ shares the same cluster housing and mounting as other International® vehicles such as the 8500 and 8600, now known as the TranStar™ series. However, it features distinctive gauges and new, lower switch packs.

An alarm sounds during out-of-range gauge readings and when certain warning lights are activated. An alarm also sounds when any engine sensor unit fails, when there is an electronic system fault and when the red engine light is illuminated.

⚠ WARNING

When an alarm sounds, stop normal vehicle operation and determine the source of the alarm condition.

Refer to ISIS® for a list of warning lights and audible alarm conditions.

Digital Display

The Digital Display below the speedometer and tachometer is arranged in four quadrants. The quadrants can be individually displayed and navigated using the display control button.

Some of the options currently available include:

- general text and warning messages
- compass heading
- outside temperature
- fuel economy
- front and rear axle load
- and transmission gear position

Some messages are used in conjunction with cluster warning lights. The digital display can also be used to retrieve DTCs if the vehicle is optioned or programmed with this feature, and not equipped with the Vehicle Information Display.

Vehicle Information Display (VID)

The Vehicle Information Display, or VID, interfaces with a variety of vehicle modules through multiple communication channels to provide information not included in the instrument cluster, as well as to clarify certain data displayed on the cluster.

⚠ WARNING

Never use the Vehicle Information Display while driving. Driving while distracted could result in an accident.

The VID powers-up when the key is turned to the ignition or accessory position. During power-up, the splash

screen is displayed. This is a start-up screen that displays the International® logo. The display changes to the Main Menu and is fully operational in less than 10 seconds. When the key switch is turned off, the display begins a power-down sequence and all pertinent data is saved.

"The VID powers-up when the key is turned to the ignition or accessory position ... and is fully operational in less than 10 seconds."

The LCD screen is enabled or disabled based on operating conditions and power-up/power-down conditions. The LCD screen's backlighting is controlled by a photocell located below button number three, at the lower left corner of the display. The photocell constantly measures the amount of light and adjusts the backlighting as needed. This function can also be enabled or disabled.

The Main Menu provides access to the following areas of the Vehicle Information Display:

- Trip Meter
- Fuel Economy
- Usage
- Diagnostic Codes
- Prognostics
- Set Up
- and Video

An Enter Password screen appears for all password-protected areas.

Once password access is granted, password requests for other screens are bypassed. This access lasts until the ignition is turned off.

The numeric buttons are used to enter the password. Then press the SELECT button to continue to the next screen.

The first option on the Main Menu is the Trip Menu, which provides detailed trip statistics.

The next option is the Fuel Economy menu. This feature provides the operator with an extended fuel economy monitor when the ignition is in the ON position.

The third option on the Main Menu is the Usage menu. This tracks chassis and engine information over the life of the vehicle.

"The Diagnostics Code option allows you to retrieve active and inactive diagnostic codes."

The Diagnostics Code option allows you to retrieve active and inactive diagnostic codes. The process for recovering diagnostic codes is covered in Module 3.

The next option is the Prognostics Menu. This provides information from the optional sensor modules on the

vehicle. The sensor-related information includes:

- Tire pressure and temperature
- Brake system conditions
- Air system supply pressures
- and Prognostic Reset

Any components added after vehicle production requires Diamond Logic® Builder, or DLB, programming to update the VID to display sensor information.

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The sensor modules send data as J1939 messages. If any sensor reading is outside an operating range, the VID alerts the operator.

If a critical failure is detected, a warning message is displayed. Press the SELECT button to acknowledge the warning and view the warning details. Press the BACK button to view additional warnings or cautions. After viewing all warnings and cautions, the VID displays the Prognostics Menu. Press the HOME button to view the Main Menu.

The following are monitored and generate a warning message if a fault is found during power-up conditions:

- Tire Pressure

- Brake Monitor
- and the Air System

The Set Up Menu allows the operator to adjust the system settings to personal preferences.

"The Set Up Menu also contains the version information for the VID, which can be useful when communicating any concerns with Tech Services."

The Set Up Menu also contains the version information for the VID, which can be useful when communicating any concerns with Tech Services.

The Pop Up Warnings section of the Diagnostic Code Set Up screen allows the operator to disable some or all warning messages.

Data for this display comes from a list in the display memory of all diagnostic messages currently active in the vehicle.

- None forces the VID to ignore any diagnostic messages from all devices. This option disables all pop up and start up warning messages.
- Partial allows only severe warnings to be displayed.
- All allows all warnings.

The Message List section of this screen allows the user to select which diagnostic codes and information are displayed.

NOTE

If the Diagnostic Code display has been disabled on the VID, this feature will not be available.

- If Active is selected, only active diagnostic codes are visible without a password. In order to view inactive codes, a password must be entered.
- The All setting shows active and inactive codes without a password.
- If None is selected, a password is required to view any diagnostic codes.

NOTE

Codes that require the vehicle to be stopped immediately are displayed in red. Faults that indicate the need for service in the near future are displayed in amber.

The Video Menu option displays multiple video feeds from outside the vehicle. These can be connected through the video inputs on the rear of the unit. For more information on the Vehicle Information Display for the International® ProStar™, refer to the operator's manual found on ISIS®.

Center Dash Panel

The Center Dash Panel features multiplexed switches, the radio, HVAC controls, alternate power sources and optional gauges. Battery voltage is also supplied for two optional switches.

There are four optional gauges available for the center dash panel to help monitor the vehicle while in service. These include brake application pressure, turbocharger boost pressure,

front/rear and rear/rear axle and lubricant temperature.

Up to 23 switches can be located in the center dash panel.

Sleeper Control Panel

Depending on the model and how it is optioned, the Sleeper Control Panel can include the Engine Control switch, climate controls, remote power inverter and the idle control system.

Remote Engine Start Stop

⚠ WARNING

NEVER use the Engine Control Switch to start the engine unless the transmission is in neutral and the parking brake is applied.

The International® ProStar™ has an optional Engine Control Switch located in the sleeper area. This allows the operator to start or shut down the engine from the sleeper. This system includes three relays in the PDC, three relays in the sleeper fuse block and relay center, four switches and an alarm.

The Sleeper Engine Control switch is located in a switch pack in the center dash panel. It is a two-position latching switch that enables and disables the Engine Control switch in the sleeper compartment.

⚠ CAUTION

Do NOT crank the engine for more than 30 seconds at a time. Wait two minutes after each attempt to allow the starter to cool.

The Engine Control Switch is a two-position, momentary switch located in the switch pack of the sleeper control panel.

If the vehicle is equipped with a manual transmission, a Neutral Safety Switch is used to verify that the transmission is in neutral. This switch is located on the transmission.

The Hood Switch is located on the driver-side splash guard, near the headlight. It disables the start/stop function if the hood is open.

Whenever the remote start function is used, an Engine Start Alarm warns anyone near the vehicle that the engine is about to start. This alarm sounds for 15 seconds prior to the start of engine cranking. The Engine Start Alarm is located in the driver-side engine compartment on the air cleaner mounting bracket.

"Whenever the remote start function is used, an Engine Start Alarm ... sounds for 15 seconds prior to the start of engine cranking."

Remote Power Inverter

The optional Remote Power Inverter converts 12 volt direct current into 120 volt alternating current. The power indicator light illuminates green when the unit is on. A blinking green light indicates the power inverter is in standby mode and the batteries are charging. The fault indicator light turns solid red to indicate the power inverter is in Over-Temperature, Overload or Battery Low mode.

Cab Thermostat

The optional Cab Thermostat is the control panel for the Cummins® Idle Management System, or ICON, and is mounted on the rear wall of the sleeper compartment. For more information, refer to Cummins® ICON training.

HVAC/Climate Control

The HVAC driver control panel is located at the bottom of the center console. The control panel has separate control knobs for blower speed, temperature and mode of operation. For more information refer to Performance A/C® Program IV: International® ProStar™ Series.

"Lights On With Wipers allows the low beam headlights to automatically turn on when the windshield wipers are in steady or intermittent mode."

Lights On With Wipers

Lights On With Wipers allows the low beam headlights to automatically turn on when the windshield wipers are in steady or intermittent mode. The low beams remain on until the ignition switch is turned OFF or the headlights are cycled on and off. This feature is not activated with the washer function.

Wiper Override

Also available on the International® ProStar™ is the Wiper Override feature. This overrides the windshield wiper

control, slowing the wipers to the lowest intermittent speed when the vehicle is stationary with the parking brake set. This prevents damage to the windshield and wiper blades.

ABS ECU

The ABS ECU is located on the right kick panel, behind the trim panel. It is mounted with four rosebud push-in fasteners.

"The ABS ECU is located on the right kick panel, behind the trim panel."

Bendix® ESP® System

The ABS system may also include traction control, and roll stability, depending on the options selected and the manufacturer of the braking system. Depending on the manufacturer of the brake system on the vehicle, there may be sensors for:

- Brake demand pressure
- Lateral acceleration
- Yaw rate
- Steering angle
- and Load

WABCO® Roll Stability

The optional WABCO® Roll Stability Control, or RSC system, is an

enhancement to the core ABS and Automatic Traction Control, or ATC, system. It provides roll stability by controlling the brakes on the drive and trailer axles.

The optional Bendix® Electronic Stability System works like the WABCO® RSC, except that the Bendix® system provides all-axle braking. The Bendix® system has sensors that monitor brake pressure, steering angle, load and yaw rate, and speed of response.

"There are two components added to the base WABCO® ABS and ATC system for roll stability control, the lateral acceleration sensor and the RSC valve."

There are two components added to the base WABCO® ABS and ATC system for roll stability control, the lateral acceleration sensor and the RSC valve.

The lateral acceleration sensor is inside the WABCO® ABS ECU. It detects side forces acting upon the vehicle.

The RSC Valve is mounted on the frame rail near the front of the vehicle. It controls the flow of air pressure to the trailer brakes during an RSC event.

E-Stroke Brake Chamber Monitoring System

Available as an option on the International® ProStar™, the E-Stroke Brake Chamber Monitoring system uses Hall Effect sensors inside each of the brake chambers to track the

position of each slack adjuster. A pressure transducer in the foot valve air circuit alerts the system when the foot valve has been pressed.

These signals are processed by the Vehicle Sensor Module, or VSM. With this information, the amount of push rod travel can be determined. This way, the system can tell if the brakes are in a normal or over stroke condition. In addition, the E-Stroke system indicates a dragging brake or a non-activating brake.

"The E-Stroke Brake Chamber Monitoring system uses Hall Effect sensors inside each of the brake chambers to track the position of each slack adjuster."

The VSM and the VID communicate over the J1939 datalink. The VID displays brake characteristics to the driver. The driver can access this information by going to the Diagnostic Menu and selecting Brake Monitor.

Tire Pressure Monitoring System

The optional Tire Pressure Monitoring System, or TPMS, advises the driver of air pressure and temperature within the tire.

The components that make up this system are: wheel electronic units mounted to the inside of each wheel rim, one front and two rear antennas, and a TPMS electronic controller located behind the lower console.

CAUTION

When removing or installing a tire from a wheel, refer to TSI 07-17-01 for the correct procedure to prevent damage to the electronic unit.

Each of the wheel electronic units includes a sensor and a microcontroller with integrated transmitter to measure and report the amount of tire pressure and temperature at each tire.

Each of these units has its own specific transmitter ID. This allows the TPMS ECU to assign a transmitted data signal to a specific wheel. The information is periodically transmitted from the wheel electronic unit to the antennas. These antennas relay the information through LIN-bus to the TPMS ECU.

NOTE

In addition to the measurement of pressure and temperature values, status signals such as the remaining life of the non-replaceable lithium batteries within the wheel electronic units are also sent to the TPMS ECU.

The TPMS ECU evaluates the incoming data and sends a J1939 message to the VID. If a leak is detected, the wheel electronics go into rapid transmit mode, so that pressure readings will be updated more often. When this occurs, a pop-up warning indicates that there is pressure loss. Additional pop-up warnings are shown when tire pressure has fallen below the desired threshold pressure value, and again for critically low pressure. Critical tire temperature is indicated the same way.

VORAD®

The Eaton® VORAD® collision warning system uses forward and side-looking sensors to monitor vehicles ahead or in the blind spot of the vehicle.

The SmartCruise® feature uses cruise control to maintain a fixed distance between the International® ProStar™ and the vehicle in front of it. If a vehicle enters a blind spot of the ProStar™, or if the ProStar™ approaches too close to the preceding vehicle, a visual and audible warning alerts the driver.

For more information on VORAD®, visit the Eaton® Roadranger® website and click on the Collision Warning link.

⚠ WARNING

The Eaton® VORAD® collision warning system is intended solely as an aid for an alert driver. It is not to be used or relied upon to operate a vehicle. This system should be used in conjunction with mirrors and other instrumentation.

NOTES

System Diagnostics Module III

This module covers the various ways the electrical system on the International® ProStar™ alerts the operator about a potential problem.

Shop Safety

When performing electrical system diagnostics, repair, or maintenance, keep in mind that proper service techniques, environmental concerns, and safety are the most important parts of this process.

⚠ WARNING

Before beginning diagnostic or service procedures, always shift the transmission to park or neutral, set the parking brake, and block the wheels.

Be sure to follow each warning, caution, and note as they are presented throughout this training program.

Warnings indicate procedures and safety measures that must be followed precisely to avoid the risk of death or personal injury to yourself or other shop personnel, and to avoid damage to the vehicle, equipment or components.

⚠ WARNING

Always provide ventilation when operating an engine in an enclosed area. Inhalation of exhaust gas can be fatal.

Cautions indicate a procedure that you must follow exactly to avoid equipment or component damage.

Notes indicate operations, procedures or instructions that are important for proper service.

⚠ WARNING

Before disconnecting or connecting electrical components, always remove the ground cable from the negative terminal of the main battery. Always connect the ground cable last.

⚠ WARNING

When working with the electrical system, always wear safety glasses with side shields, hearing protection, and chemical-blocking nitrile gloves.

When performing service work of any kind, always protect the interior of the vehicle by using a paper floor mat, a steering wheel cover, and a seat cover.

When working on the electrical system, keep the work area and tools as clean as possible. Also, clean all connections before disconnecting or removing components.

Be sure that you know the location of properly rated and charged fire extinguishers.

Be sure you know the location of an emergency eyewash station.

Diagnostic Trouble Codes

The ability to display Diagnostic Trouble Codes, or DTCs, is an optional feature. DTCs can be accessed through the instrument cluster or the optional VID.

NOTE

When performing diagnostics on a vehicle equipped with a VID, fault codes are only displayed on the VID, not the gauge cluster.

The technician can also access fault codes using an EZ-Tech® and Diamond Logic® Builder software.

Vehicle Information Display (VID)

Brake Monitor

The brake lining and actuator stroke indicator are available for each wheel

end. The up and down arrows cycle through the wheel ends.

Color coding is also used to indicate problems. Yellow indicates a potential problem and red shows a serious condition.

Air System

This screen provides overall performance of the air system. Color coding is used again to indicate conditions. Green for OK, yellow for a potential problem, while orange indicates that service is required at the next opportunity.

Prognostic Reset Menu

The Prognostic Reset Menu resets prognostic systems after a condition has been inspected or serviced. If the condition has not been repaired, a new warning is displayed. The system is reset by navigating to the appropriate diagnostic and pressing the SELECT button.

"The Prognostic Reset Menu resets prognostic systems after a condition has been inspected or serviced."

Tire Pressure Monitor Set Up

The Tire Pressure Monitor function has a series of set-up screens. Start by selecting the TPMS Setup screen. An arrow indicates the tire location. To change the pressure setting, press the SELECT button. The arrow points to

the pressure setting. Press the UP or DOWN buttons to increase or decrease the pressure setting in 1 psi increments. Press the SELECT button after reaching the desired pressure. Select the next tire with the UP or DOWN buttons and repeat the process.

When the pressure for all the tires is correct, move the arrow to SAVE and press the SELECT button.

Tire Type

The proper tire type—either dual or single—is selected by pressing either the UP or DOWN button and then the SELECT button.

Tire Sensors

NOTE

If a tire or tires are moved to a different axle location, make sure to keep track of the sensor ID number, since they must be reprogrammed to that new location.

The Tire Transmitter ID screen identifies each tire transmitter ID number and allows these to be reassigned to different axle locations. This is necessary when tires are moved or rotated. The UP and DOWN buttons move from tire to tire.

Breakout Box

With the introduction of 2007 vehicles equipped with the new Body Controller, a new electrical troubleshooting Breakout Box is required. The breakout box allows the Body Control system

components and the instrument cluster to be tested without disturbing connections or piercing wire insulation. The dual purpose breakout box uses 180 pins and overlays to allow technicians to easily change between the vehicle's electrical components.

This breakout box is designed to work with other vehicles with the addition of a simple vehicle specific harness and overlay.

NOTES

Service Procedures Module IV

This module covers specific service procedures for the International® ProStar™ electrical system and related components.

Compass Calibration

Start by selecting quadrant two on the digital display.

Press and release the display control until the Calibrate Compass message appears.

Press and hold the display control until End Calibration is displayed.

Next, drive the vehicle in three complete circles. During this process the compass display will go blank or have dashed lines.

NOTE

If "NO CAL" appears, the previous steps must be repeated.

After stopping the vehicle, select quadrant two on the display and select End Calibration.

In order for the compass to be accurate, the vehicle's declination zone must be established after the calibration process is complete.

NOTE

The vehicle must be stationary before you can begin the declination process.

Start by selecting quadrant two on the digital display.

NOTE

Refer to the Declination Zone map on ISIS® to determine the operational zone of the vehicle.

NOTE

If no zone is selected within 15 seconds, the display will return to the Compass Declination screen.

⚠ CAUTION

When removing or installing the Yaw Rate/Lateral Acceleration Sensor, do not strike or pry the sensor. Do NOT use an impact tool to install the mounting hardware.

NOTE

Before calibrating the Yaw Rate/lateral Acceleration Sensor, make sure the EZ-Tech® is loaded with the most current Bendix® ACom Diagnostics software.

Press and hold the display control until “Compass Declination” is displayed.

Press and hold the display control once again to bring up the declination zone number selection screen.

Turn the display control until appropriate Declination Zone number appears. Set the compass zone number by pressing and holding the display control until Compass Declination is displayed.

Yaw Rate/Lateral Acceleration Sensor Calibration

The Yaw Rate/Lateral Acceleration Sensor must be calibrated any time it is replaced.

Use the Bendix® ACom Diagnostics software loaded on the EZ-Tech® to perform calibration.

Select the “Configuration” option, followed by the “Calibrate” option. Select Lateral Acceleration. Then click start.

Follow the onscreen prompts. The screen displays instructions you must perform and acknowledge in order to complete the calibration process.

NOTES

NOTE

Throughout the removal and installation of the Steering Angle Sensor, you may need to adjust the steering column up and down to access various components.

Steering Angle Sensor Removal

With the telescoping steering column in the full up position, remove the trim panels.

Disconnect the Steering Angle Sensor wiring harness by depressing the side tabs and pulling up on the connector.

NOTE

The steering wheel may need to be rotated to access the head of the pinch bolt and nuts.

Remove the nut and pinch bolt from the clamp section of the U-joint yoke and discard it.

Mark the position of the yoke to the wheel shaft to maintain proper clocking of the steering wheel during reassembly.

Remove the yoke and shaft assembly from the wheel shaft, taking care not to damage the splines.

Remove the screws, and slide the sensor off the shaft.

Steering Angle Sensor Installation

Install the new Steering Angle Sensor by aligning its tab with the slot on the wheel shaft. Make sure the connector is oriented in the proper direction.

Install the back retaining cover.

Align the marks and reinstall the yoke and shaft assembly onto the wheel shaft. Install a new pinch bolt and nut. Tighten to the specification found on ISIS®.

Reconnect the steering angle sensor wiring harness.

Reinstall the lower trim panels.

NOTE

Be sure to observe the orientation of the Steering Angle Sensor Connector and the tab in relation to the slot on the wheel shaft.

⚠ WARNING

Improper installation can cause the tab on the inside ring of the Steering Angle Sensor to disengage from the slot of the wheel shaft. This can cause the Bendix® Stability System to malfunction, resulting in loss of vehicle control.

⚠ WARNING

If the Steering Angle Sensor is not recalibrated, the yaw control system may not function properly, which can result in loss of vehicle control.

NOTE

If the steering wheel was turned to remove the pinch bolt and nut, return the steering wheel to the center position before attempting the calibration procedure.

NOTE

Before calibrating the Steering Angle Sensor, make sure the EZ-Tech® is loaded with the most current Bendix® ACom Diagnostics software.

⚠ CAUTION

Do not use vise-grip pliers to grip and lock the pushrod in place. This may damage the E-Stroke components and void the unit's warranty.

Steering Angle Sensor Calibration

The Steering Angle Sensor must be calibrated:

- Any time the Steering Angle Sensor has been replaced
- After any maintenance or repair work on the steering linkage, steering gear, or other related mechanism
- And, after any adjustment of the wheel alignment or wheel track

To perform the calibration procedure for the Steering Angle Sensor, refer to the "Calibration – Yaw Rate/Lateral Acceleration Sensor" section of this module.

Use the Bendix® ACom Diagnostics software loaded on the EZ-Tech® to perform calibration. Select the Configuration option. Then select the Calibration option. Next, select Steering Angle. Then click Start.

Follow the onscreen prompts. The screen displays instructions you must perform and acknowledge in order to complete the calibration process.

NOTES

NOTE

Always use the proper procedure when backing off any automatic slack adjuster. Follow the manufacturer's recommended procedures as found on ISIS®.

E-Stroke Brake Chamber Monitoring System

Some important points to keep in mind when servicing this system:

Manually adjust the slack adjuster and yoke away from the non-pressure chamber approximately one quarter to one half of an inch. Doing so will slightly compress the internal return spring, ensuring that the E-Stroke components stay in their correctly keyed positions.

⚠ CAUTION

Do not attempt to rotate, slide or otherwise adjust the magnetic sleeve, sleeve clamp or sensor stone shield.

Proper alignment is essential when installing the sensor into the stone guard sensor port. The sensor end must be inserted perpendicular to the face of the stone guard until the sensor is completely seated. Failure to fully seat the sensor directly affects the accuracy of the E-Stroke system.

⚠ WARNING

After the sensor has been installed, follow the proper procedures found on ISIS® to adjust the brakes before returning the vehicle to service.

In order to determine whether the brake actuator is functioning properly, refer to ISIS®. Keep in mind the service brake air pressure is measured by the pressure transducer while the pushrod stroke position is determined by the Hall Effect sensor inside the brake chamber.

Conclusion

This concludes the International® ProStar™ Electrical program. Completion of this educational process is a key component towards International® Technician Certification. You are now required to take a post-test via ISIS®/ Education/Service/Online Testing.

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