

# WinAlign® Alignment Software

Operation Manual

Version 14.3



**HUNTER**  
Engineering Company



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# 1. Getting Started

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## 1.1 General Introduction

This manual provides operation instructions and information required to operate the WA Series aligner with WinAlign® software. WinAlign software version 14.x is a 64-bit program and is compatible only with Windows® Vista or Windows® 7.

With HawkEye Elite HE421 Series Sensors, every alignment is a Picture Perfect® alignment. HawkEye Elite HE421 Series Sensors use four stationary, high-resolution cameras, each with a designated Digital Signal Processor, which continuously measure the position and orientation of targets.

The owner of the Series WA Series aligner is solely responsible for arranging technical training. Only a qualified trained technician should operate the WA Series aligner. Maintaining records of personnel trained on this equipment is solely the responsibility of the owner and management.

### ***References***

This manual assumes the user is already familiar with the basics of wheel alignment. Italics are used to refer to specific parts of this manual that provide additional information or explanation. For example, refer to “Operating the Console.” These references should be read for additional information to the instructions being presented.

---

## 1.2 System Requirements


WinAlign® software version 14.x is a 64-bit program that is compatible with only WA Series aligners with 1GB of RAM or higher running Windows® Vista or Windows® 7.

Required Software that will be installed by the WinAlign software 14.x Installer:

Microsoft® DirectX® 9.0c or later.

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## 1.3 Inside Help Tips

The “HELP” key accesses an on-line, context-sensitive copy of this manual. The “HELP” softkey label is available on all screens, usually located in the **K4** key of the lowest menu level. If the “HELP” softkey is not present, press  until it appears.

When **K4** is pressed, a pop-up screen appears with the question “What kind of help would you like?” The choices are:

- “Cancel” will close the pop-up and return the screen where “HELP” was pressed.
- “Table of Contents” will open a pop-up screen with the table of contents of the “Help Manual.”
- The softkey label for **K4** will be “About nnnnnn,” and will refer to the topic or procedure of the screen from where “HELP” was pressed. Pressing **K4** will open the Help Manual directly to the reference section for that topic.

## 1.4 For Your Safety - Hazard Definitions

These symbols identify situations that could be detrimental to your safety and/or cause equipment damage. Watch for these symbols:



Hazards or unsafe practices, which could result in minor personal injury or product or property damage.



Hazards or unsafe practices, which could result in severe personal injury or death.



Immediate hazards that will result in severe personal injury or death.

### **IMPORTANT SAFETY INSTRUCTIONS**

Read and follow all caution and warning labels affixed to your equipment and tools. Misuse of this equipment can cause personal injury and shorten the life of the aligner.

Always use wheel chocks in front of and behind the left rear wheel after positioning a vehicle on the rack.

Use caution when jacking the vehicle.

**ALWAYS WEAR OSHA APPROVED SAFETY GLASSES.** Eyeglasses that only have impact resistant lenses are **NOT** safety glasses.

Wear non-slip safety footwear when performing an alignment.

Never stand on the aligner.

Do not wear jewelry or loose clothing when performing an alignment.

Wear proper back support when lifting or removing wheels.

Do not operate equipment with a damaged cord, or equipment that has been dropped or damaged, until a Hunter Service Representative has examined it.

Never use the cord to pull the plug from the outlet. Grasp plug and pull to disconnect.

If an extension cord is necessary, a cord with a current rating equal to or more than that of the equipment should be used. Cords rated for less current than the equipment may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.

Verify that the electrical supply circuit and the receptacle are properly grounded.

To reduce the risk of electrical shock, do not use on wet surfaces or expose to rain.

Verify that the appropriate electrical supply circuit is the same voltage and amperage ratings as marked on the aligner before operating.

To reduce the risk of fire, do not operate equipment in the vicinity of open containers of flammable liquids (gasoline).

Keep all instructions permanently with the unit.

Keep all decals, labels, and notices clean and visible.

To prevent accidents and/or damage to the aligner, use only Hunter recommended accessories.

Use equipment only as described in this manual.



**NOT FOR USE IN A COMPUTER ROOM AS DEFINED IN THE STANDARD FOR PROTECTION OF ELECTRONIC COMPUTER/ DATA PROCESSING EQUIPMENT, ANSI/NFPA 75.**



This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause interference with electronic devices. Operation of this equipment in a residential area may cause interference in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.



Do not turn the power off when the disk drive is operating. The disk can be damaged.





**DO NOT ALTER THE ELECTRICAL PLUG.** Plugging the electrical plug into an unsuitable supply circuit will damage the equipment and may result in personal injury.


### **SAVE THESE INSTRUCTIONS**


### ***Precautions for Systems Equipped with HFSS, XF and XF2 Cordless Sensors***

The following precautions apply to the HFSS, XF and XF2 transceivers installed in the aligner console and the alignment sensors as part of the HFSS, XF and XF2 cordless sensor option.

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

 Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

 **RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.**

 Tread DepthTool: 221-731-1  
Contains FCC ID: LS3-45-1443  
IC: 2938A-451443  
  
Model: 45-1443

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.


## ***Specific Precautions/Power Source***

### **North America**

The PC aligner is intended to operate from a power source that will apply 120 VAC (nominal) 50/60 Hz between the supply conductors of the power cordset.

### **Other Regions**

The PC aligner is intended to operate from a power source that will apply 230 VAC (nominal) 50/60 Hz between the supply conductors of the power cordset. The power supply cordset, supplied with this equipment, may need modification to allow connection to the power supply mains. Your Hunter service representative will install the proper plug for your location.

 A protective ground connection, through the grounding conductor in the power cord, is essential for safe operation. Use only a power cord that is in good condition.

### **FUSING:**

To avoid fire hazard, use only the fuse specified for your product.

### **EQUIPMENT SERVICE:**

This equipment contains no user serviceable parts. All repairs must be referred to a qualified Hunter Service Representative.

### **PROVISIONS FOR LIFTING AND CARRYING:**

No provision has been made for lifting or carrying this equipment. The unit must be moved by rolling it on its casters.

## ***Equipment Specifications***

### **Electrical**







VOLTAGE:	120/230 volts (nominal)
AMPERAGE:	6/3 amps
WATTAGE:	720 watts

### **Atmospherics**

TEMPERATURE:	0°C to +50°C (+32°F to +122°F)
RELATIVE HUMIDITY:	Up to 95% Non-condensing
ALTITUDE:	Up to 1829 m (6000 ft.)

## Explanation of Symbols

These symbols appear on the equipment.

	Alternating current.
	Earth ground terminal.
	Protective conductor terminal.
I	ON (supply) condition.
○	OFF (supply) condition.
	RISK of electrical shock.
	Stand-by switch.
	Not intended for connection to public telecommunications network.

## 1.5 What's New in WinAlign® 14.3

### Quick Tread™ Drive Over Tread Depth

WinAlign 14.3 supports the Quick Tread drive over tread depth system which can be integrated with other Quick Check modules.

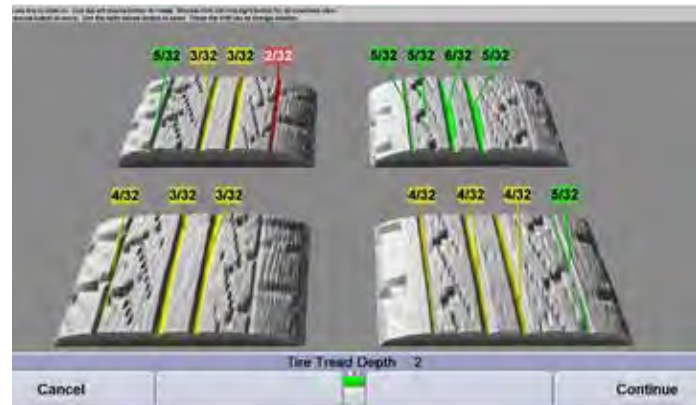


Figure 1

### New Printout Builder and Segments

Includes new segments and allows better customization of the Quick Check printout.



Figure 2

## New FasterCaster® Procedure

Measure caster only, without using the brake pedal depressor.

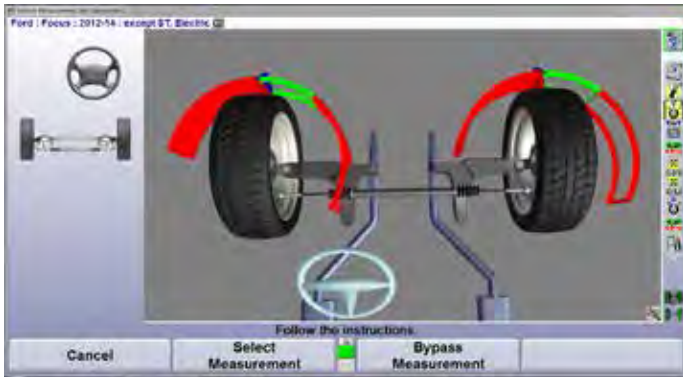


Figure 3

## Updated Results Integration with HunterNet

Automatic log-in option signs into HunterNet without requiring a password after restart. Quiet Mode option sends results to ShopResults without adding a step to the end of the procedure.

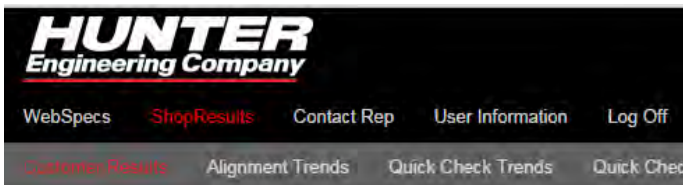


Figure 4

## 1.6 Operating the Console

Individual consoles will vary due to specific model number and production date. Detailed console-specific instructions will be included with the aligner console.

### Turning Console Power On

Turn the unit “ON” by pressing the power switch located on the left side panel, or on the back panel of the aligner cabinet.

The “Logo” screen will appear and indicate that the unit is ready for use. This will take approximately 1.5 minutes.



Figure 5

### Turning Console Power Off

To turn off the aligner power, do the following:

Turn off cordless sensors. (Each sensor has a power switch.)

Reset the console.

Press “Exit Aligner”. A “Confirmation” pop-up screen will ask if you are sure you want to exit the aligner. Press “Yes”.

Wait for the aligner program to end. The aligner will shutdown automatically.












Turn off console power.



Do not turn off the power while information is being written to the disk drive. This occurs during console setup and when specifications are being stored. This can result in corrupt disk drive files.

## Using the Softkeys

The softkeys, located on the keyboard, provide operator control of the program. These keys are identified as:

	K1 key		Forward key
	K2 key		Backward key
	K3 key		Zoom key (keyboard)
	K4 key		Zoom softkey (screen display)
	Menu shift key		Forward key
	Reset key		

The four labels that appear at the bottom of each screen are referred to as the softkey labels. These labels indicate the action that the program will take when the corresponding **K1**, **K2**, **K3**, or **K4** key is pressed.

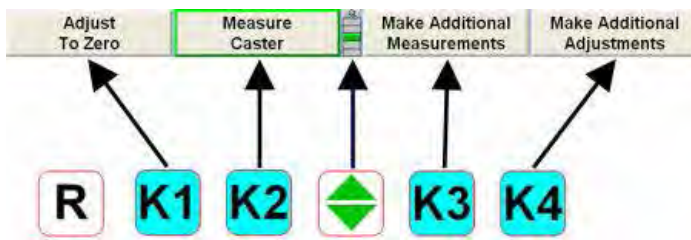





Figure 6

The vertically stacked squares between the “K2” and “K3” labels indicate how many levels of softkeys are available. The highlighted box indicates the menu level that is currently displayed.

The softkey level is changed by pressing the menu shift softkey, . When this key is pressed, the softkey labels will change to the next level down. If the last menu level is currently displayed, the softkey level will be the first softkey level. To go to the next softkey level up, press  and .




Pressing  and  will zoom the current softkey level to a full screen version as seen below. The softkeys associated with the softkey label are shown on the left side of the labels and the softkey level is indicated on the right side of the labels. Pressing  again will cause the softkey level to return to the original view.



Figure 7





Pressing , or selecting  above the softkey levels, or pressing and holding with a pointing device on the menu level indicator will cause all of the menus available to appear, as seen below. The green background indicates the active menu level. Pressing  again will cause the menu to return to the original perspective.



Figure 8

The number of softkeys displayed may be reduced to only the number of softkeys needed for a typical alignment by enabling Reduce Number of Softkeys in Aligner Setup. Refer to “Aligner Setup.”

Throughout this manual, the statement Press “nnnnnn” indicates the label of the softkey to press. If the required label is not on the current menu,  must be pressed to change menu levels until the desired label is displayed.

Some softkeys have a green color. Generally, the softkey with the green color (usually K4) is the appropriate key to press to continue with the procedure being performed, as seen below.



Figure 9

### Alignment Procedure Bar



Whether ExpressAlign® is enabled or disabled, a vertical procedure bar appears along the right side of the screen. The Alignment Procedure toolbar displays an icon for each alignment or WinAlign® procedure available or performed.

The icons are arranged in order from the first step that you must complete to the last step that you must complete. After each alignment procedure has been completed, a checkmark will appear in the upper right corner of the corresponding icon.

If there are more icons available than space on the screen, the toolbar can be scrolled up or down. If the triangular area at the top or bottom is gray there are more choices available and can be selected to scroll up or down. If the triangle is blue, no more choices are available in that direction.

When the cursor is placed over an icon, a message appears describing the icon's function, such as ExpressAlign.


Selecting an icon from the Alignment Procedure bar will take you to the procedure that the icon represents.

Selecting  Backward key, or the  Forward key, will move the screen backward or forward in the alignment procedure as outlined on the procedure bar.

A Plan View Indicator, located along the right side of the screen, under the procedure bar, shows which axle is being adjusted when a gray background is present.



## Using the VirtualView® Adjustment Feature

 VirtualView® is available only on 811/WA Series Aligners.

The VirtualView adjustment feature allows the user to view alignment angles in a 3-D perspective. This feature provides the user with a detailed view of the angles and their status in respect to alignment angle specifications and is reinforced with corresponding bar graphs.

VirtualView is available for most measurements and adjustments screens, plus Rolling Compensation, Caster Steer, and WinToe®.

If the measured angles are within tolerance, the arrows will be in the green. If the measured angles are marginal, the arrows will be shown in yellow (if half-tolerances are enabled). If the measured angles are out of specification, the arrows will be shown in red areas. The arrowhead of the alignment angle will protrude through a 3-D specification bar graph showing the current angle status.

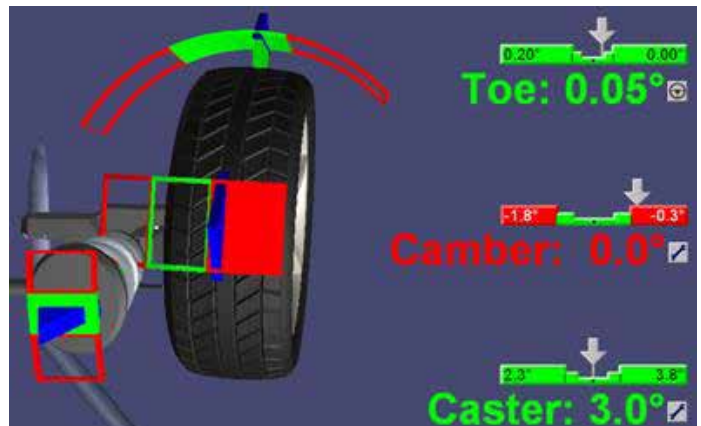



Figure 10

 If measurements have not been taken or are not available, the 3-D bar graph will not be shown in VirtualView.

From the "Vehicle Measurements and Adjustments" screen, you may toggle between VirtualView with bar graphs, or bar graph-only measurements by pressing "Show Bar Graphs" from the softkeys. VirtualView is the default "Vehicle Measurements and Adjustments" setting, however, may be disabled in "Aligner Setup". Refer to "Aligner Set-Up."

VirtualView displays all measured angles of the vehicle on one screen. It is not necessary to switch screens to view measurements on the front axle or the rear axle. Camber and toe for both axles, caster for the front axle, and thrust angle are all displayed adjacent to the appropriate wheel in VirtualView.



The VirtualView image has strategically placed hotspots for navigation around the vehicle on-screen. The image below exhibits some of the hotspots available. (Not all of these hotspots are available at once.)

Guide the mouse across the screen to highlight a hotspot, exhibited by a dotted line around the area. Boxes shown on the extreme out side edges of the screen will display a side-view of the vehicle when selected.



Figure 11

While in any VirtualView displaying bar graphs, click on an individual bar graph to zoom in to that particular view.

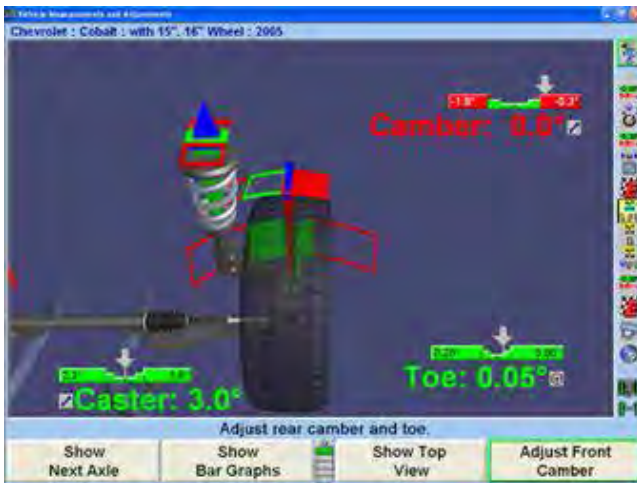


Figure 12



Figure 13

Right-click to return to the previous view.

### VirtualView® Angle Selector

When VirtualView® appears, the VirtualView Angle Selector on the left side of the screen will appear when the cursor is moved over the left side of the screen, allowing you to select a variety of wheel and angle views.

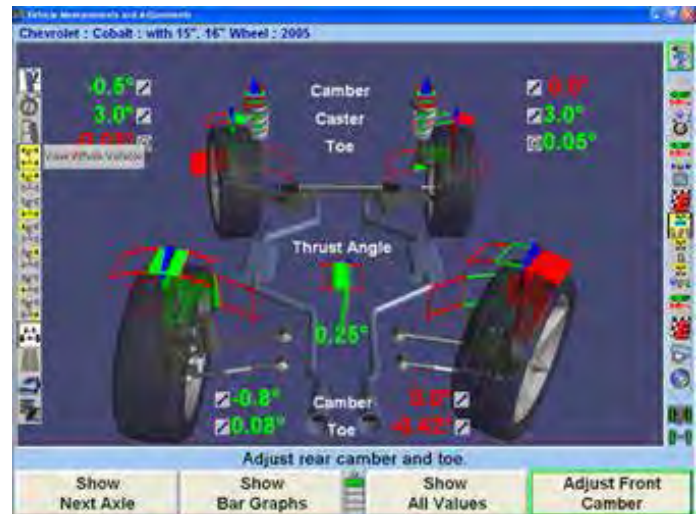


Figure 14 - Standard Monitor



Figure 15 - Widescreen Monitor

Refer to the image below for a description of all the possible choices.

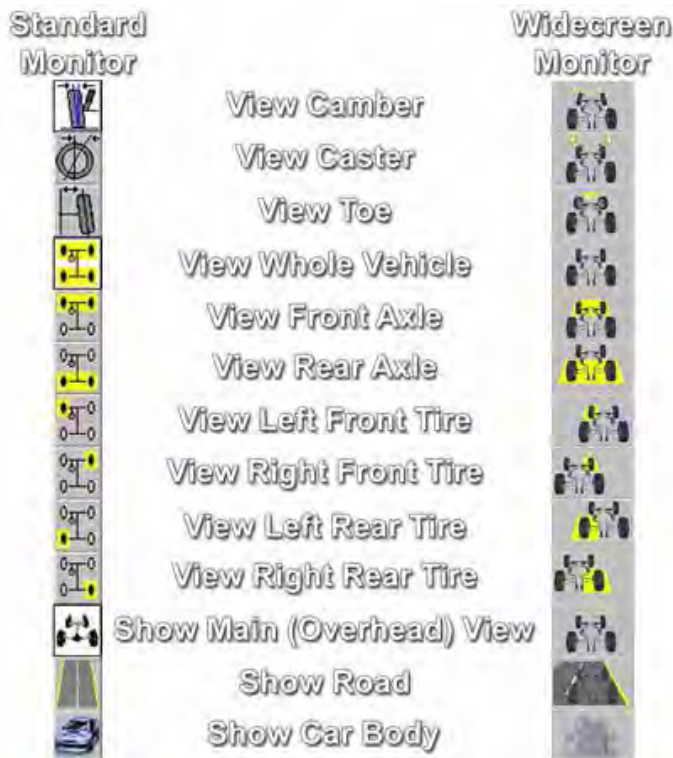


Figure 16

The VirtualView can be enhanced by adding the road image in relation to the vehicle and adding a view showing the car body.

The Dual Screen VirtualView requires Kit 20-1450-1.

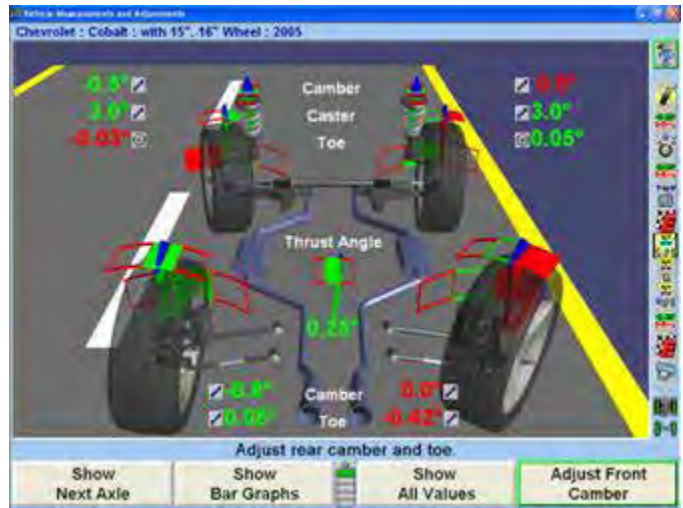


Figure 17

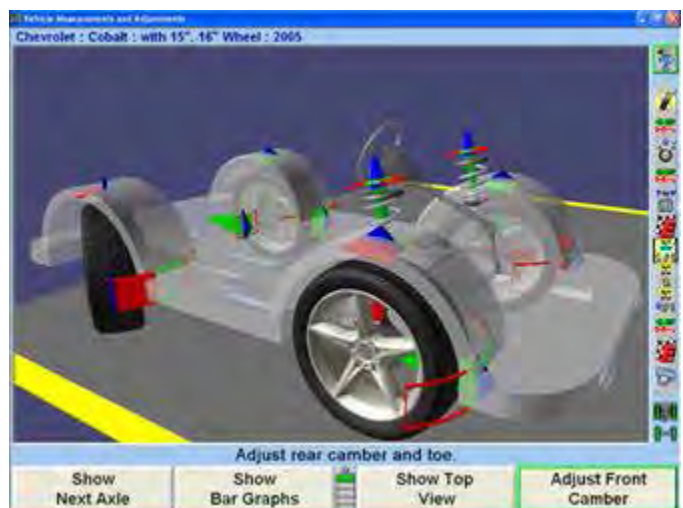



Figure 18

### SoundGuide® Tone Feedback System

SoundGuide® Tone Feedback System is an audio recognition system that offers audible alignment feedback when performing certain functions within the alignment program.

SoundGuide®, , is available on many screens including the caster measurement screen and WinToe®, or from drop-down menus on most screens, as shown below.

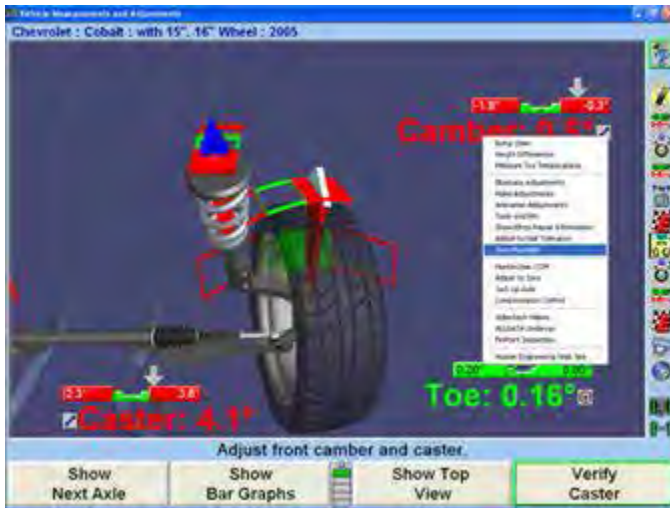




Figure 19



Figure 20


Turn the SoundGuide® on or off by single-clicking on the icon . When SoundGuide is off the icon appears with a red line through it . SoundGuide® can be selected from bar graphs or icons next to individual angles to turn on SoundGuide for those individual adjustments.

SoundGuide is available from various screens including: WinToe®, Rolling Compensation, Caster Steer, VirtualView®, and Bar Graphs.

### AlignGuide® Training Feature

AlignGuide® Training Feature and information guide is an information center on WinAlign® Alignment Software. It contains training videos and information on using WinAlign® Alignment Software, wheel sensor operations, vehicle operations, vehicle troubleshooting, and alignment adjustment methods.

AlignGuide® Training Feature is available only with the Digital Video option.

To access the AlignGuide® Training Feature, select the  icon above the Procedure Bar. A drop-down menu will list all the choices available including access to “WinAlign Help”, “Tools and Kits”, “Illustrate Adjustments”, (these choices are context-sensitive based on the current WinAlign screen), and a selection for “All Videos and Animations”.

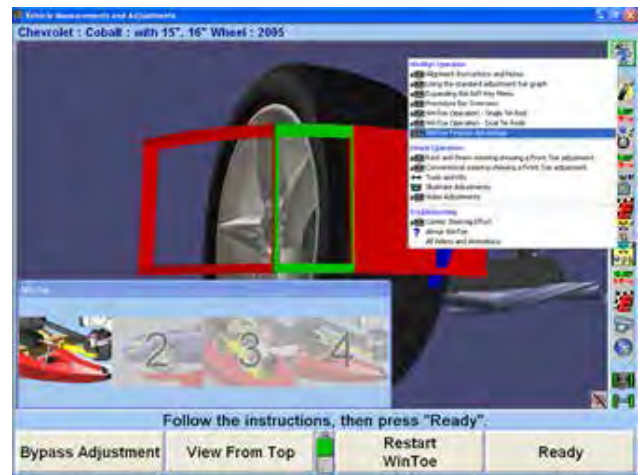


Figure 21

Select the appropriate choice and the video, animation, illustration, or Help item will display.

### Resetting the Program

The alignment program may be reset at anytime during an alignment by pressing the **R** key, located at the upper left-hand corner of the keyboard. A confirmation screen will appear to verify that the **R** button was pressed intentionally.



Figure 22

When this screen appears, press “YES” to reset the program or “NO” to continue working.

When the aligner is reset, the information collected for the alignment in progress will be erased and the display will return to the “Logo” screen.

## Video Library


The Hunter Video Library provides easy access to informational videos. To access the Hunter Video Library click on the “AlignGuide® Training and Information”,  icon at the top of the procedure bar. Then select “Browse Videos.”



Figure 23

The videos are sorted into four tabs:

- Hardware Operation
- WinAlign Operation
- Alignment Fundamentals
- Hunter Technology

A search feature is also available in the upper right corner of the Hunter Library window.

## Using the Screen Saver

If the monitor displays the same image for a long period of time, the image may become “burned in”, and will be visible even when the display is turned off. This is a characteristic of ALL computer monitor displays.

When screen saver is on and any key (even a remote control key) is pressed, the program will reappear on the display. This single keystroke is recognized only by the screen saver program and will not affect the aligner program. After the screen is on, additional key presses will operate the program normally.



When screen saver is activated, the system is STILL RUNNING.

## 1.7 Using the Remote Control

There are four remote controls available for use with the WinAlign® program, the Standard Remote or three versions of the Remote Indicator.

The standard remote control is included with the aligner console. The remote indicators are optional upgrades.

For detailed information on operation, care, and maintenance for the optional remote indicator refer to Form 5382T, Operation Instructions for Remote Indicator, Models 30-419-1-X, 30-421-1-X-XF, and 30-418-1-XF.

The Base model of the remote indicator displays alignment angles supplied by WinAlign alignment software, version 1.5.1 and greater.

Base model, 30-419-1-X, is not capable of wireless communication.

Base model, 30-421-1-X-XF, is capable of wireless communication.

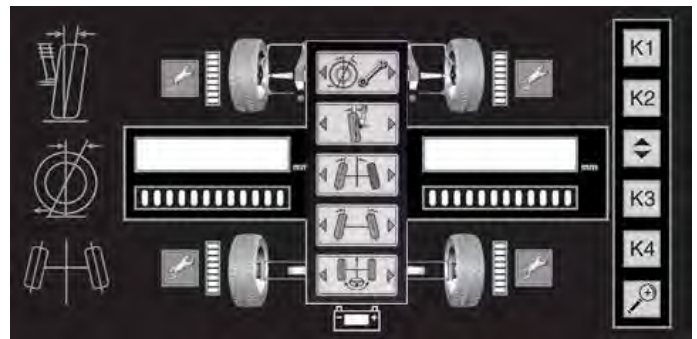


Figure 24

The Plus model of the remote indicator will display alignment angles supplied by WinAlign, (version 1.5.1 and greater) and also record measurements to be used by WinAlign (version 9.0 and greater).

Plus model, 30-418-1-XF, is capable of wireless communication.

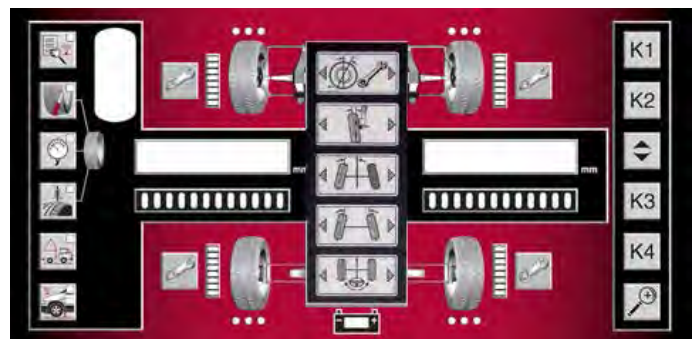


Figure 25

## Sensor Compensation Display Using the Remote Control (Camera Sensors Only)

When using camera based sensors, the four bar graphs of eight LEDs stacked in a row located next to each wheel graphic indicate the status of the targets during compensation.



Figure 26

Turn the wheel (jacking compensation) or roll the vehicle (rolling compensation) to turn the LEDs from red to green.

Pause as WinAlign® accepts the measurement, then turn wheel again as directed by indicator. When performing jacking compensation procedure, repeat the compensation procedure for all four wheels.

## Measure Caster Display Using the Remote Control

When using conventional or camera sensors, the bar graphs located under the left and right value displays indicate the status of the front wheel orientation during the measurement of the caster.

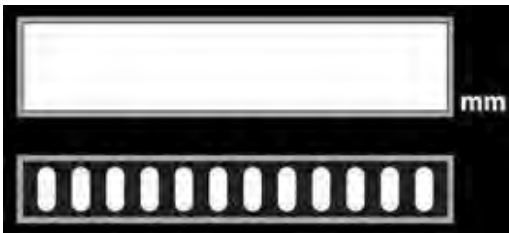


Figure 27

Turn the steering wheel to turn the LEDs from red to green.

Pause as WinAlign® accepts measurement, then again turn the steering wheel as directed by indicator.

## Alignment Values Display Using the Remote Control

After the alignment measurements are complete, the remote indicator will display the alignment values.

### Selection of Alignment Values to Display Using the Remote Control

Press the selection button of the desired alignment measurement: caster adjust, camber, toe, total toe, or thrust (angle) / steer (ahead).

Using the left and right display, the remote indicator displays two alignment values.

The availability of different display combinations depends on the version of WinAlign within the aligner console. Pressing the selection button of the desired alignment measurement repeatedly will change the display combination, if more than one combination is available.

The available display combinations with WinAlign® 9.0 or higher are shown below.

Table 1: Available Display Combinations with WinAlign 9.0 or Higher					
	CASTER ADJUST	CAMBER	TOE	TOTAL TOE	THRUST / STEER
CASTER ADJUST	YES	YES			
CAMBER	YES	YES	YES		
TOE		YES	YES		
TOTAL TOE					YES
THRUST /STEER				YES	

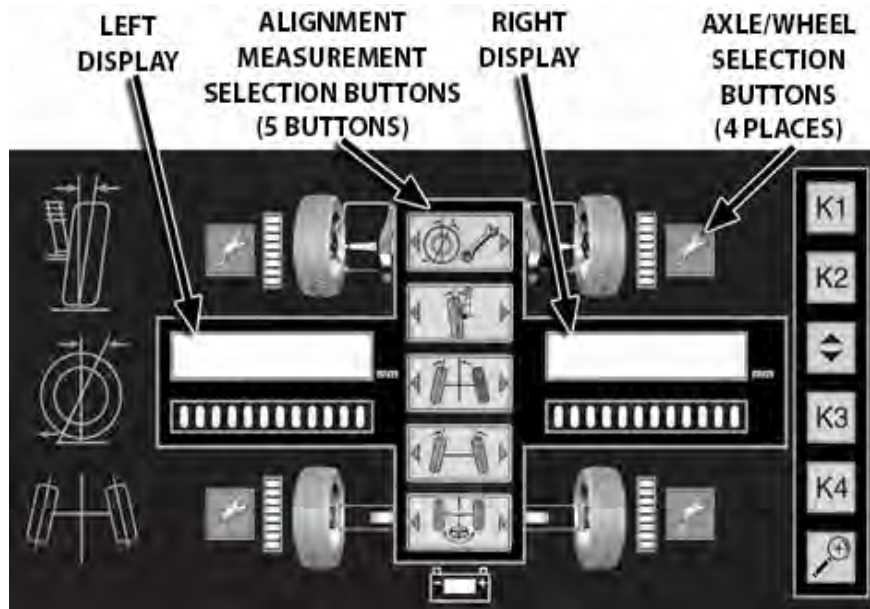


Figure 28

Press the wrench button next to the desired wheel or axle.

Alignment values will appear in the left and right displays.

Negative values are indicated with a negative sign “-” on left side of display.

Degrees are indicated with a degree symbol “°” on right side of display.

Angles can also be displayed in degrees and minutes (i.e. 0°05 displayed for a measurement of zero degrees and 5 minutes).

Change the alignment measurement displayed by pressing another alignment measurement selection button.

Change the wheel or axle displayed by pressing another wrench button next to the desired vehicle location.

### ***Identification of Values Displayed and Bar Graphs Using the Remote Control***

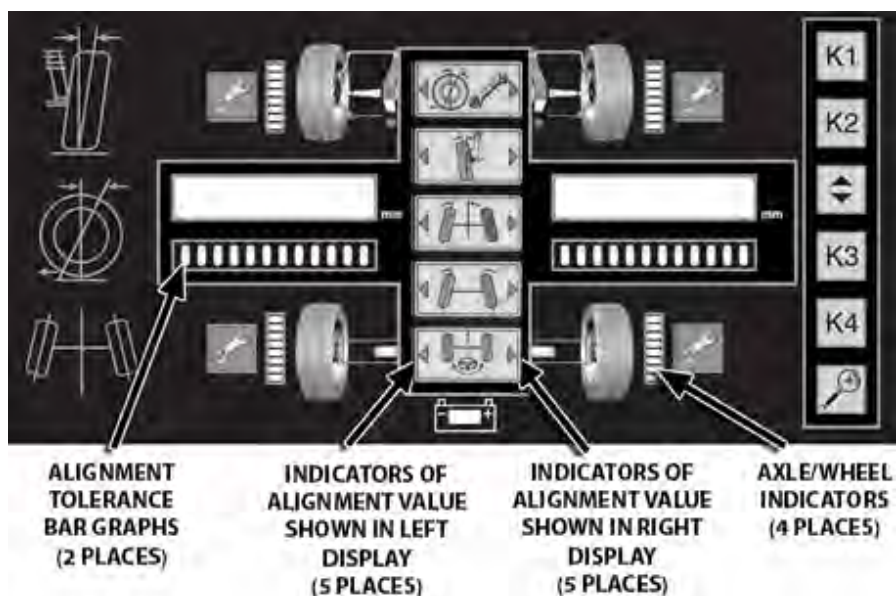


Figure 29

LED indicators identify the type of alignment values displayed and the location of the measurements.

The illuminated green triangle to the right of the selection button indicates the type of alignment measurement shown in the right display.

The illuminated green triangle to the left of the selection button indicates the type of alignment measurement shown in the left display.

The partially illuminated bar graph next to one wheel or an axle indicates the location of the displayed alignment values.

The “mm” illuminated indicates values displayed are in metric unit of millimeters.

LED Bar graphs below alignment value displays indicate the difference between the actual measurements of the vehicle and the recalled specifications.

A red LED indicates the alignment value is out of the specified range. If located on the left side of the bar graph, a positive alignment adjustment is needed. If located on the right side of the bar graph, a negative alignment adjustment is needed.

Green LEDs in the center of the bar graph indicates the alignment value is within the specified range.

With WinAlign® 9.0 or higher, the bar graph will enter a mode of higher resolution when the measured value is close to being within tolerance. The bar graph will just represent the near tolerance and within tolerance region.

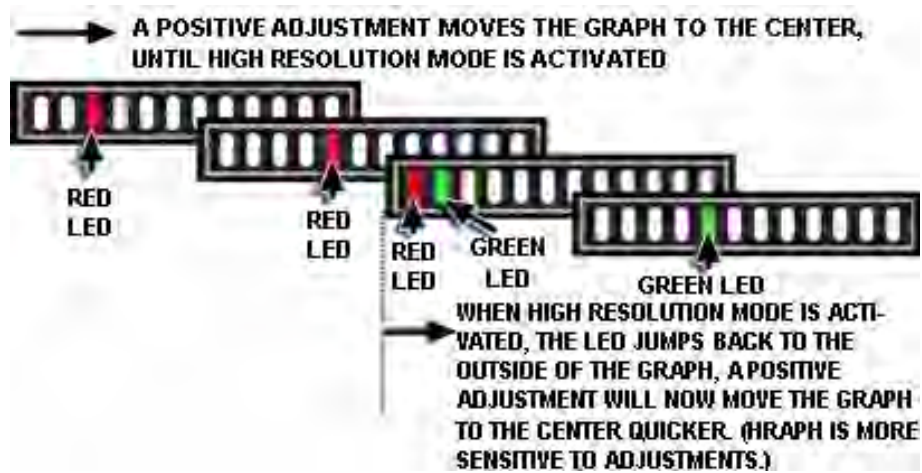


Figure 30

## Examples of Alignment Displays Using the Remote Control

Individual Toe of Front Wheels: The display shows the left wheel toe is  $-0.16$  degrees (out of tolerance) and the right wheel toe is  $-0.05$  degrees (within tolerance).

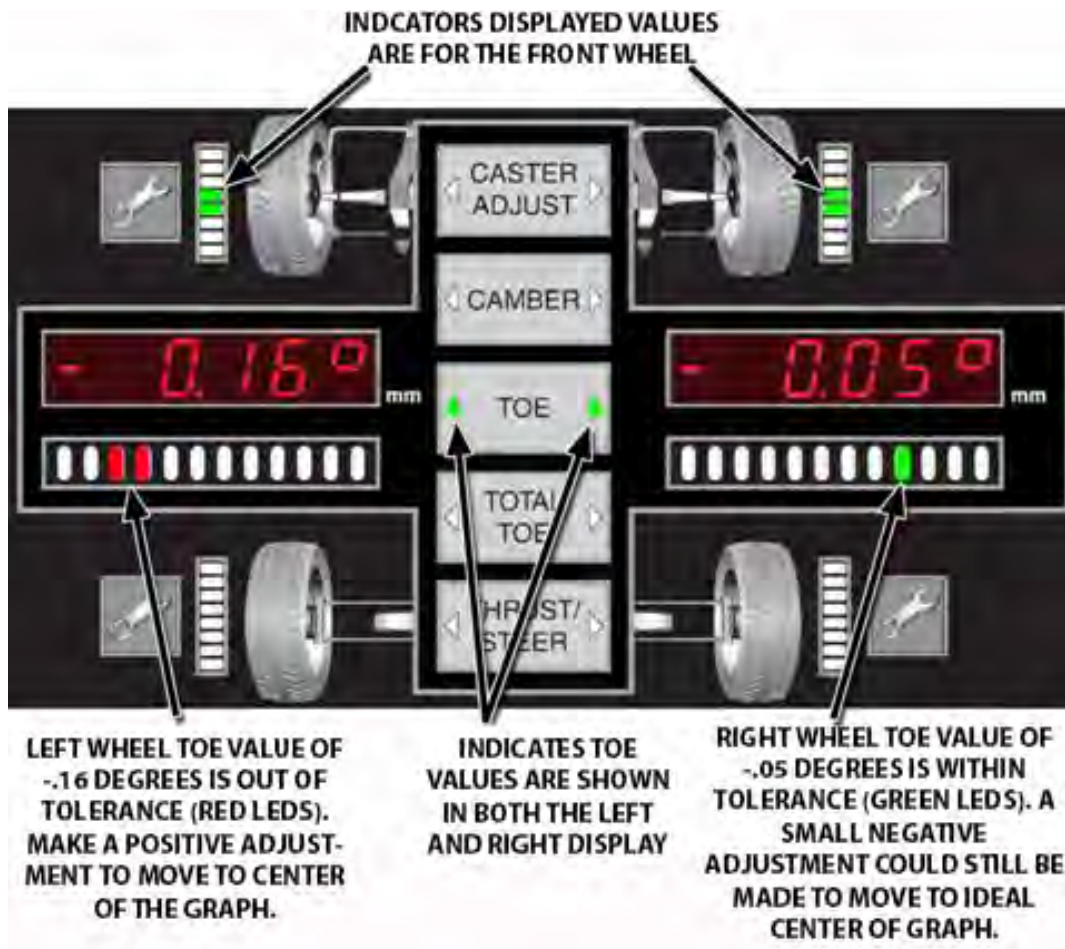


Figure 31



Camber and Caster Adjust of Right Front Wheel: The display shows the camber is -1.0 degrees (out of tolerance) and the caster adjust is 2.5 degrees (within tolerance) for the right front wheel.

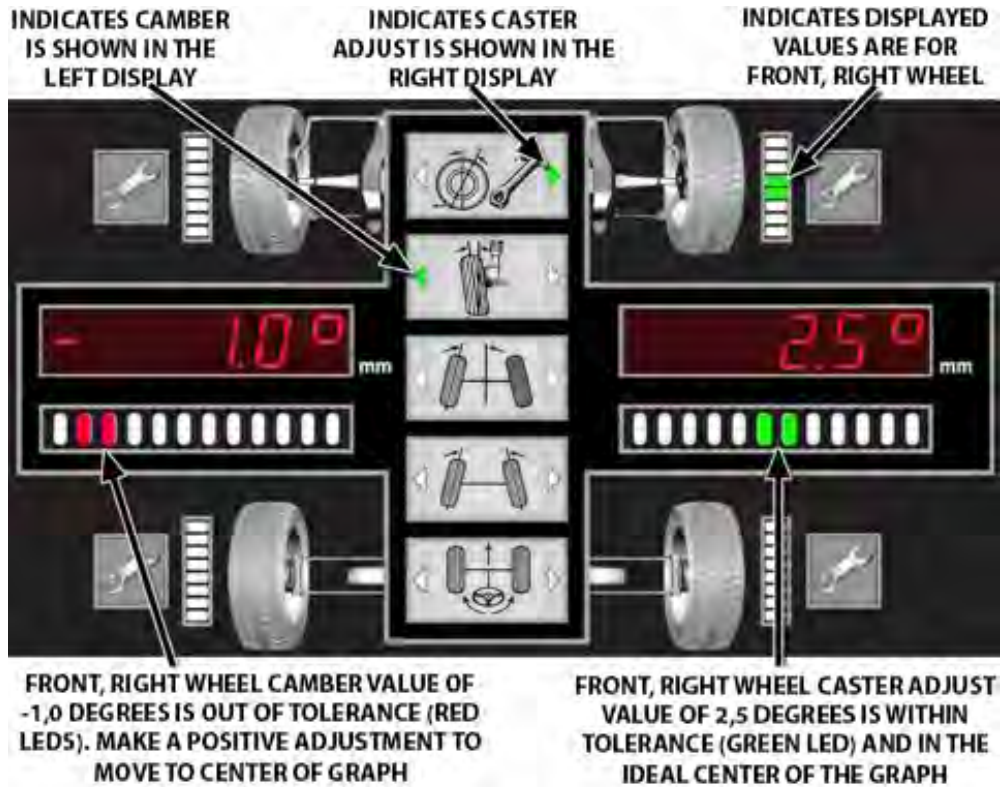


Figure 32

### Recording Measurements Using the Remote Control (Plus Model Only)

Select the desired measurement button to begin the process of entering measurement values.

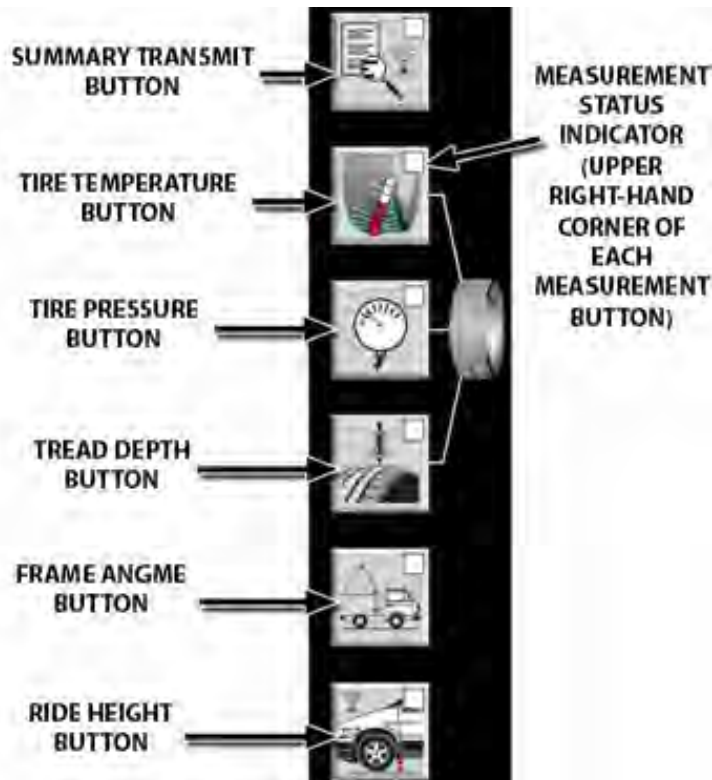


Figure 33

The green LED in the corner of each button indicates the status of the remote.

After pressing a measurement button, the blinking green LED in the corner of the selected button indicates the remote is in the mode to store values for this measurement.

After exiting a measurement mode, the steady illumination of the green LED in the corner of the button indicates the remote has at least one stored value in remote's memory for this measurement.

An un-illuminated LED in the corner of the button indicates the remote has no stored values in remote's memory for this measurement.

Holding-down a measurement button for 3 seconds will erase the stored measurements.



Holding-down the measurement button for 3 seconds to erase the stored measurements is true for all the measurement types, except ride height.

Holding-down the summary button for 3 seconds will erase all the stored measurements for every measurement type.

Pressing any of the alignment angle buttons (caster adjust, camber, toe, total toe, or thrust / steer) will end a measurement mode and return the remote indicator to displaying alignment angles.

### ***Display of Measurements Using the Remote Control - Value Displays***



The term "live" is used to indicate the value is active, in contrast to a stored value that is fixed.

The "live" measurement is shown in the display on the left side. Blinking LEDs in the bar graph below the display is to signify the value is "live".

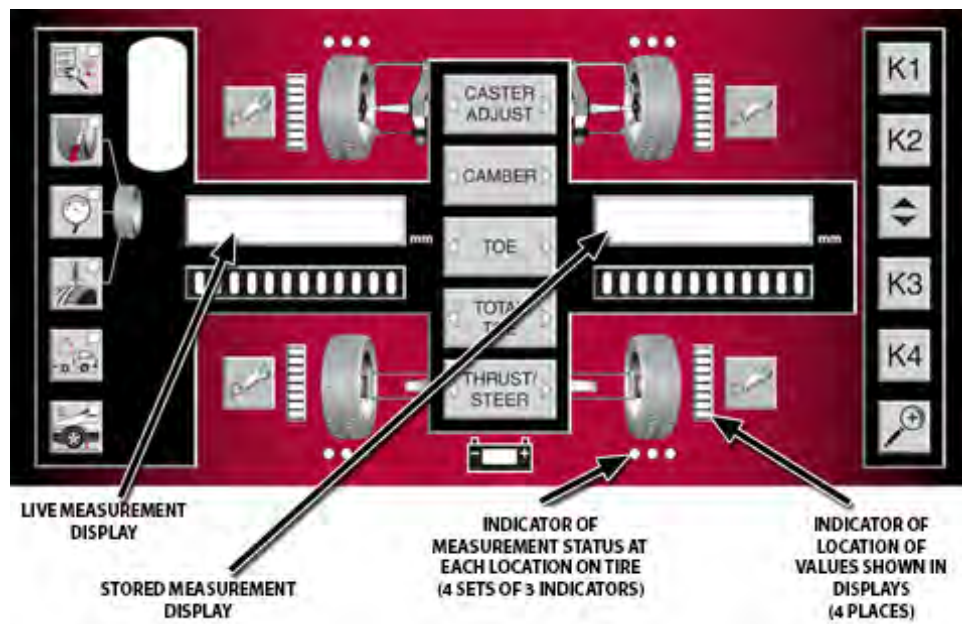


Figure 34

If present, the stored measurement is shown in the display on the right side. Steady LEDs in the bar graph is to signify the value is the stored value.

Values may be further clarified by the following symbols:

Negative values are indicated with a negative sign "-" in the left side of the display.

Values displayed in inches are indicated with the double dash inch symbol in the right side of the display.

When angle is displayed, degrees are indicated with a degree symbol “°” in the right side of the display. Angles can also be displayed in degrees and minutes (i.e. 4°05’ for a measurement of four degrees and 5 minutes).

When a temperature is displayed, “C” is for Celsius and “F” is for Fahrenheit.

The “mm” illuminated indicates values displayed are in metric unit of millimeters.

### **Remote Control Indicators**



The state of the LED illumination, steady or blinking, is meaningful. Blinking LEDs consistently indicates a live value. Steady LEDs consistently indicates a stored value.

Along with LED in the corner of each measurement button to identify the active measurement mode, other LED indicators identify the location of the displayed measurement value and the presence of a stored value at each possible location.

The partially illuminated bar graph next to the wheel graphics indicates the location of the displayed values.

For tire temperature, pressure, and tread depth measurements, the tire location is indicated with the bar graph next a wheel.

For frame angle measurements, the side of the vehicle is indicated with bar graphs next to two wheels.

The green LED dots located above or below the wheel graphics further indicates the location of the displayed measurement and also the presence of stored values.

When a tire temperature or tread depth measurement is displayed, the location on the tire (outside edge, center or interior edge) is indicated by which of the three dots is flashing.

When a tire pressure measurement is the active mode, the three dots at each wheel graphic act as one indicator, since each tire only has one pressure measurement.

When a frame angle measurement is the active mode, the six dots at each side of the vehicle graphic act as one indicator, since each side only has one angle measurement.

The presence of stored values at the individual locations is indicated by steady illumination of the green dot or dots (depending on measurement).

Un-illuminate green dot (or dots) indicates that a value is not stored at these locations.



When the ride height measurement mode is selected, only the LED in the corner of the ride height button is flashing to identify the active measurement mode. No other LED indicators are used to identify location or presence of stored values, because the remote indicator does not store ride height values. For ride height operation instructions, refer to “Measuring Ride Height.”

## Storing Measurement Values Using the Remote Control



The remote indicator does not store ride height values. For ride height operation instructions, refer to "Measuring Ride Height."

Storing measurement values is done using buttons, the dial and indicators on the remote indicator in a consistent manor for each type of measurement.

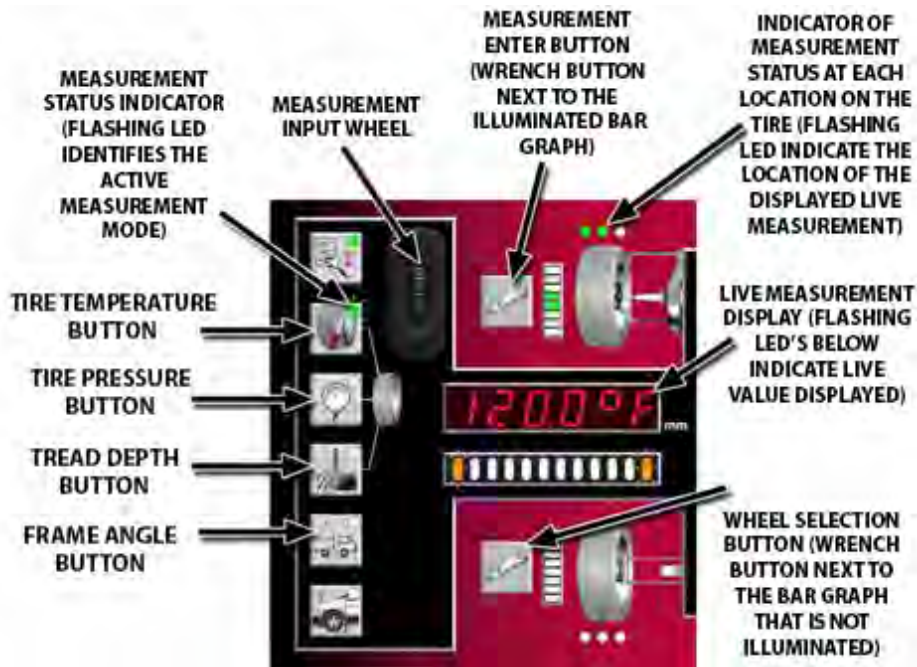


Figure 35

Select the desired measurement button. The blinking LED in the corner identifies the active measurement mode. (When not active, a solid green LED indicates the presence of a stored value for the measurement type.)

The flashing green LED dot (or dots) located above and below the wheel graphics indicate the location of the displayed measurement. (A solid green LED dot indicates the presence of a stored value for the location.)

Set the "live" measurement in the display on the left side by dialing in the desired value with the measurement input wheel (or by using the output of a built-in sensor).



When in a measurement mode, the function of the wrench button depends on the illumination of the bar graph next to it.

Press the wrench button next to the illuminated bar graph to store the value.

Press the wrench button next to a bar graph that is not illuminated to select another tire or vehicle side.

Refer to the particular instructions for each measurement type.

## Tire Temperature Readings Using the Remote Control



Figure 36

Select the tire temperature button.

Identify the location for displayed “live” measurement as indicated by the LED indicators. Each single green LED dot located above and below the wheel graphics represents a location on the tire: outboard, center and inboard.



The remote indicator will automatically detect the thermocouple probe. The temperature reading will automatically be displayed as the “live” measurement.

Use either the remote’s thermocouple to measure the temperature or use another temperature gauge to measure and then dial-in the value with the input wheel.

With the “live” measurement on the left side displaying the desired value, press the wrench button next to the illuminated bar graph to store the value.

The remote indicator will automatically advance to the next measurement location on the tire. Repeat the measurement entering process until the outboard, center and inboard tire location have a stored value.

When storage of measurement values for the outboard, center and inboard tire location is complete for a tire, move to another tire by pressing a wrench button next to a bar graph that is not illuminated.

Repeat the measurement entering process until a value is stored for every location as indicated by the illuminated LED dots.

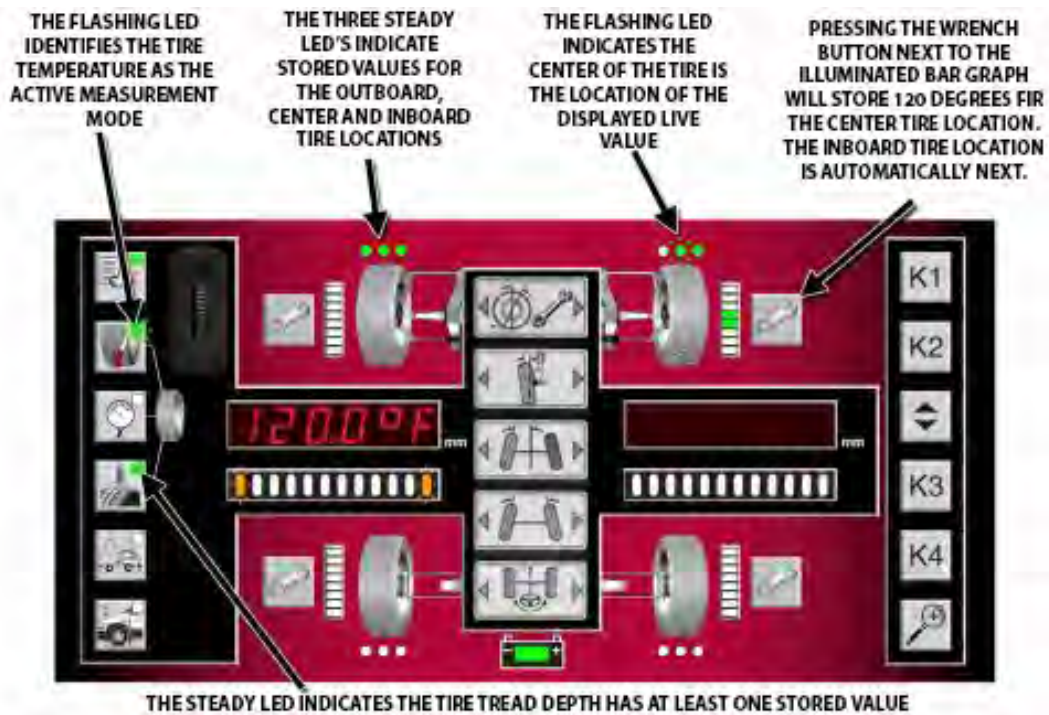


Figure 37

## **Tire Pressure Readings Using the Remote Control**



Figure 38

Select the tire pressure button.

Identify the location for displayed “live” measurement as indicated by the LEDs on the remote indicator. Each set of three green LED dots located above and below the wheel graphics represents a tire location.

Use a pressure gauge to measure and then dial-in the value with the input wheel.

With the “live” measurement on the left side displaying the desired value, press the wrench button next to the illuminated bar graph to store the value.

Move to another tire by pressing the tire pressure button to advance to the next location or by pressing wrench button next to bar graph that is not illuminated.

Repeat the measurement entering process until a value is stored for every location as indicated by the illuminated LED dots.

## **Tire Tread Depth Using the Remote Control**



Figure 39

Select the tire tread depth button.

Identify the location for displayed “live” measurement as indicated by the LED indicators on the remote. Each single green LED dot located above and below the wheel graphics represents a tire location: outboard, center and inboard.

Use a tread depth gauge to measure the tread depth at the indicated location and then dial-in the value with the input wheel.

With the “live” measurement on the left side displaying the desired value, press the wrench button next to the illuminated bar graph to store the value.

The remote will automatically advance to the next measurement location on the tire. Repeat the measurement entering process until the outboard, center and inboard tire location have a stored value.

When storage of measurement values for the outboard, center and inboard tire location is complete for a tire, move to another tire by pressing a wrench button next to a bar graph that is not illuminated.

Repeat the measurement entering process until a value is stored for every location as indicated by the illuminated LED dots.

## **Measuring Frame Angle Using the Remote Control**



Figure 40

Select the frame angle button.

Identify the location for displayed “live” measurement as indicated by the LED indicators on the remote. The set of six green LED dots located above and below the wheel graphics represents the side of the vehicle.

Position the remote on the vehicle to measure the angle. The built-in angle sensor will measure and display the frame angle.

With the “live” measurement on the left side displaying the desired value, press either wrench button next to the illuminated bar graphs to store the value.

Move to the other side by pressing the frame angle button or by pressing a wrench button next to bar graph that is not illuminated.

Repeat the measurement entering process.

## **Reviewing and Editing Stored Values Using the Remote Control**

Select the desired measurement button with stored values (as identified with the solid green LED indicating the presence of a stored value for the measurement type.)

The stored value (if present) in the first location is shown in right display. The measurement location is indicated by the flashing green LED dot or dots (located either above or below the wheel graphics).

Pressing the measurement button again will advance the display to the stored value in the next location.

Another way to change the measurement location is by pressing the wrench button next to an un-illuminated bar graph. Measurement location will change to this wheel or side. For tire temperature or tread depth measurements,

the location on the tire (outside edge, center or interior edge) is changed by pressing the measurement button.

To replace the stored value, set the “live” measurement on the left side displaying the desired value (by dialing in the desired value or by using the output of a built-in sensor), and then press the wrench button next to the illuminated bar graph to store the new value.

### Remote Control Summary / Transmit Button



 WinAlign® 9.0 (or higher) is required for the aligner console to receive tire and frame angle measurements.



Figure 41

Steady LED in the corner of the summary button identifies the presence of a stored value for any of the measurement types.

 Pressing and holding the summary button for 3 seconds erases ALL the stored measurement values in the remote.

Press the summary button once to transmit the stored values to WinAlign.

The blinking LED in the corner of the summary button indicates the values are being transmitted.

WinAlign will display a summary of the measurements. Blank fields within the summary indicate that no value was transmitted for this measurement.

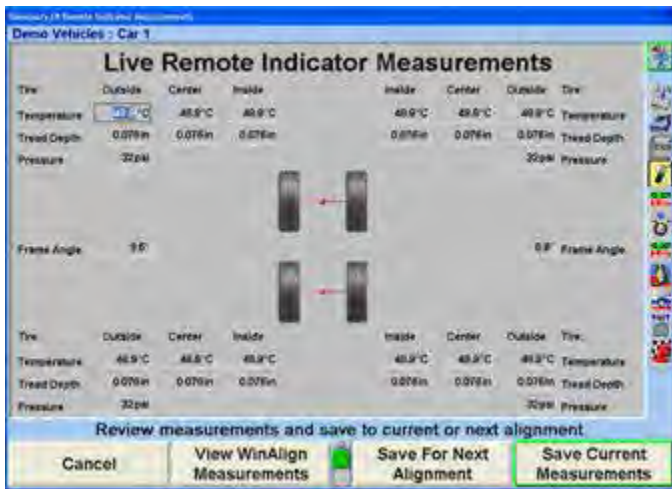



Figure 42

The WinAlign summary pop-up will show the following values:

- Front Axle - 6 values of tire temperature
- Rear Axle 6 values of tire temperature
- Front Axle - 2 values of tire pressure
- Rear Axle 2 values of tire pressure
- Front Axle - 6 values of tire tread depth
- Rear Axle 6 values of tire tread depth
- 2 values of frame angle

After the values are successfully transmitted to WinAlign, all the stored measurement values are erased from the remote.

### Ride Height Using the Remote Control

 Recalling certain vehicles from the information database, will automatically bring up the Ride Height screen, such as Volkswagen Touareg.

From the alignment measurements display screen, press the menu shift key, until the “Make Additional Measurements” softkey is displayed. Press the “Make Additional Measurements” softkey. Highlight “Ride Height” from the list using the arrow softkeys or mouse. Press “OK” softkey.

When prompted by the WinAlign® program, begin ride height measurement procedure with the wheel indicated.


Reference the WinAlign image of the vehicle to determine the appropriate reference points for the ride height measurements.

Press the ride height button on the remote.



Figure 43

The blinking LED in the corner identifies ride height as the active measurement mode.

 No other LED indicators are used to identify location or presence of stored values, since the remote indicator only transmits the live ride height value.

Use a gauge to measure the ride height and then dial-in the value with the input wheel located at the upper, left corner.










WinAlign 9.0 or higher is required for the aligner console to receive ride height measurements from the remote indicator.

With the blinking LED identifying ride height as the active measurement mode, press the ride height button again to transmit the value to WinAlign.

The distance measured will be displayed within the appropriate field on the WinAlign screen. The cursor will then move to the next ride height entry field.

Repeat the process to enter all ride height measurements, as prompted by WinAlign.

### ***Using the Standard Remote Control***

The standard aligner console remote control provides operation of the WinAlign® program from a distance by duplicating the five softkeys. Some remote controls have six softkeys , , , , , and a zoom key . Pressing  will zoom screens that support the zoom feature.

To use the remote control, point the front end of the transmitter toward the front of the aligner and press the appropriate softkey.



The remote control transmitter is a line-of-sight device and will not transmit signals through solid objects.

## **1.8 Example Alignment Jobs**

The following two examples show the most common ways to perform an alignment.

### ***Example Alignment with ExpressAlign® with Camera Based Sensors***

This example alignment job assumes that the system is configured with the factory defaults and a Hunter FIA equipped alignment rack is used. Your system may be configured differently.



This section is an overview of an alignment job using the ExpressAlign feature. For details about any procedure, refer to the appropriate section of the WinAlign® manual or press HELP in the WinAlign® program.

Prepare the vehicle for alignment as follows. This can be completed while WinAlign® is on the Logo screen and without pressing “Begin Alignment.”

Drive the vehicle onto the alignment rack, centering the front wheels on the turnplates.

Apply the vehicle parking brake and place the transmission in neutral.

Position chocks at the front and rear of the left rear tire to keep the vehicle from rolling.

Place the lift at alignment height.

Check and adjust tire pressure to vehicle manufacturers specification. Inspect for unevenly worn or mismatched tires.


Inspect the suspension and steering linkage components for wear, looseness, or damage.

Mount the targets and wheel adaptors on the wheels. Refer to “Mounting Sensors or Targets onto Wheel Adaptors.”

Perform rolling compensation.


Release the parking brake and roll the vehicle rearward past the point where the arrows turn green and then roll forward until the arrows turn green again. Stop rearward movement of the vehicle and remove hands from the tire. The arrows will disappear for a moment.



 It is recommended to roll the vehicle by rotating the left rear tire. Do not push or pull the vehicle by the front (steering axle) tires or wheels during rolling compensation. Do not push or pull on spoilers, fascia moldings, or other trim accessories.

When the compensation arrows reappear, roll the vehicle forward to the original position.

Position chocks at the front and rear of the left rear tire to keep the vehicle from rolling.

 The rolling compensation procedure **MUST** end with the vehicle in the proper position to check and adjust the alignment.

After rolling compensation is performed the turnplates and slip plates will unlock automatically.

WinAlign will ask for the vehicle specifications using the methods last used.

After specifications are selected the “Caster and SAI Measurement” screen will appear. Follow the directions on the screen to perform the caster steer measurement.

After the caster steer is performed the “Symptoms Printout,” which includes before measurements, will print automatically.


ExpressAlign® will select the procedures to align the vehicle correctly. Follow the instructions on the screen to perform the alignment. If more information is needed on a specific procedure, refer to the proper section of this manual.

### ***Example Alignment with ExpressAlign® Adjustment with Conventional Sensors***

The Total Four-Wheel alignment procedure requires the use of all four sensors and is typically used when adjustments are available for rear camber and/or rear toe.

This example alignment job assumes that the system is configured with ExpressAlign® Level III enabled.

Your system may be configured differently.

 This section is an overview of an alignment job using the ExpressAlign feature. For details about any procedure, refer to the appropriate section of the WinAlign® manual or press HELP in the WinAlign® program.


Prepare the vehicle for alignment as follows:

Position vehicle onto alignment rack with the front wheels centered on the turning angle gauges.

Place the vehicle transmission in park and apply the parking brake.

Position chocks at front and rear of left rear tire.

Place the lift at alignment height.

 The alignment rack must be level to properly perform an alignment.

Inspect for unevenly worn or mismatched tires and adjust tire pressure to vehicle manufacturers specification.

Inspect the suspension and steering linkage components for wear, looseness, or damage.

Start the alignment program by pressing “Begin Alignment” on the Logo screen.

WinAlign will ask for the vehicle specifications using the methods last used.

When the vehicle is identified to the program, the screen will change to the “Compensation Control” pop-up screen.

Mount sensors on wheels and compensate them for runout. Refer to “Mounting Sensors or Targets onto Wheel Adaptors.”

After the sensors have been compensated, remove the pins from the turnplates and slip plates, then lower and jounce the vehicle.

ExpressAlign® will select the procedures to align the vehicle correctly. Follow the instructions on the screen to perform the alignment. If more information is needed on a specific procedure, refer to the proper section of this manual.

Verify that the pins are in place in the slip plates and turnplates before driving the vehicle off the rack.

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## 2. Basic Operation Information

### 2.1 Sensors and Targets

#### ***TD Target™ Alignment Reflectors and Quickgrip™ Adaptors***

TD Target™ alignment reflectors attach to wheels with adaptors for the purpose of indicating individual wheel position and orientation as measured by digital-camera alignment sensors to perform vehicle alignment service.

QuickGrip™ alignment wheel adaptors quickly and safely attach digital-camera alignment sensor reflectors to vehicle wheels by gripping the treads of tires instead of wheel rim edges, as is typical with other alignment wheel adaptors.

TD Target™ alignment reflectors and QuickGrip™ adaptors alignment wheel adaptors can only be used with Hunter HawkEye Elite™ alignment sensors.

#### **TD Target™ Alignment Reflectors**



Figure 44

#### **Vehicle Corner**

Each TD Target™ alignment reflector is marked by the factory as to which corner of the vehicle it is assigned. The plastic casting of the target is marked 0, 1, 2, or 3 below the reflective surface. A sticker is placed covering one of the reflective blocks, which identifies it as position 0, 1, 2, or 3.

Number	Vehicle Corner
0	Driver Front
1	Passenger Front
2	Driver Rear
3	Passenger Rear

## **Target Set Assignment**

To the right of the vehicle corner assignment are target set A, B, or C assignment blocks. The set of targets must be assigned to a target set. This is accomplished by placing the A, B, or C identified decal over the appropriate reflective block. The plastic casting of the target has an A, B, or C marked under the reflective blocks.

## ***Wide Angle Targets***

The Wide Angle Targets provide additional target surface for certain circumstances during an alignment process. A few of these circumstances are:

Wide Angle Measurement

Toe Out On Turns

20° Caster Sweep

The Wide Angle Targets attach to the TD Targets using a magnet. They are specific to the left and right sides of the vehicle. They are also marked for a particular target set similarly to the TD targets.



Figure 45

## ***Standard or QuickComp™ Roll-Forward Compensation***

TD Target™ alignment reflectors are capable of either standard rolling compensation or QuickComp™ roll-forward compensation. A simple adjustment of the target is required depending on which compensation method is used.

### **Standard Compensation**

Standard compensation is performed by stopping the center of the vehicle's front wheels in the center of the front turnplates and then rolling the vehicle towards the rear of the rack and then forward again onto the turnplates when performing the compensation procedure.



Center of Wheel  
on Center of Turnplate

Figure 46

To configure the TD Target for standard compensation:

Loosen knob in center of TD Target.

Rotate TD Target until the number on the vehicle ID decal and the number in either of the two right windows is the same.



Figure 47

Tighten knob in center of TD Target

### **QuickComp™ Roll-Forward Compensation**

QuickComp™ Roll-forward compensation is performed by stopping the leading edge of the front tires on the centerline of the front turnplates and then rolling the vehicle forward onto the front turnplates when performing the compensation procedure.



Figure 48

To configure the TD Target for QuickComp™ Roll-forward compensation:

Loosen knob in center of TD Target.

Rotate TD Target until the number on the vehicle ID decal and the number in either of the two left windows is the same.



Figure 49

Tighten knob in center of TD Target

### **QuickGrip Adaptor Tire Hooks**

The QuickGrip Adaptor has three different tire hooks that are easily changed to accommodate different size tire and wheel combinations.

### **Fixed Size Hooks**



Figure 50 - Small 20" to 26" O.D. Tires



Figure 51 - Medium 25" to 32" O.D. Tires



Figure 52 - Large 29" to 37" O.D. Tires

### Changing Hooks

To change the tire hooks remove the pin securing the tire hook to the QuickGrip Adaptor and place desired hook on QuickGrip Adaptor. Secure with pin.



Figure 53

### *Placing QuickGrip Adaptor on Wheel*

#### Typical Wheels

The QuickGrip Adaptor simply mounts to the wheel by placing the QuickGrip Adaptor on the wheel and using the hooks to grip the tire tread.



Figure 54

Squeeze the clamp on the right-hand side of the QuickGrip Adaptor to secure the QuickGrip Adaptor to the wheel.



Figure 55

To remove QuickGrip Adaptor, release clamp and remove from wheel.

### **Truck Dually Wheels and Deep Dish Wheels**

When mounting on dually truck wheels or other deep dish wheels use the wheel spacers.



Figure 56

Place the QuickGrip Adaptor on the spacers. Position the nubs on the QuickGrip adaptor in line with the rubber clamps on the spacer. Then secure the spacer to the QuickGrip Adaptor with the rubber clamps.



Figure 57

Mount the QuickGrip Adaptor with the spacer on the wheel.



Figure 58 - Mounted on front axle of dually truck wheel



Figure 59 - Mounted on rear axle of dually truck

## 2.2 Self-Centering Adaptors and targets

Sensors or targets may be mounted on the wheel adaptors before mounting the wheel adaptors on the vehicle. In some cases, it may be easier to mount the wheel adaptor first and then mount the sensor or target onto the adaptor (either method may be used).

### *Mounting Sensors or Targets onto Wheel Adaptors*

Sensors may be mounted on the wheel adaptors before mounting the wheel adaptors on the vehicle. In some cases, it may be easier to mount the wheel adaptor first and then mount the sensor onto the adaptor. Either method may be used.

Center the wheel adaptor center casting between the upper and lower castings. When the center casting is properly centered, a plunger ball will fall into the detent position on the adaptor rod.

Tighten both center casting lock knobs firmly. This will prevent the center casting from slipping down when the sensor is attached.



Hand tighten center casting lock knobs as tight as possible (DO NOT USE TOOLS TO TIGHTEN).



If the center casting lock knobs are not firmly tightened, runout compensation and alignment accuracy will be adversely affected.

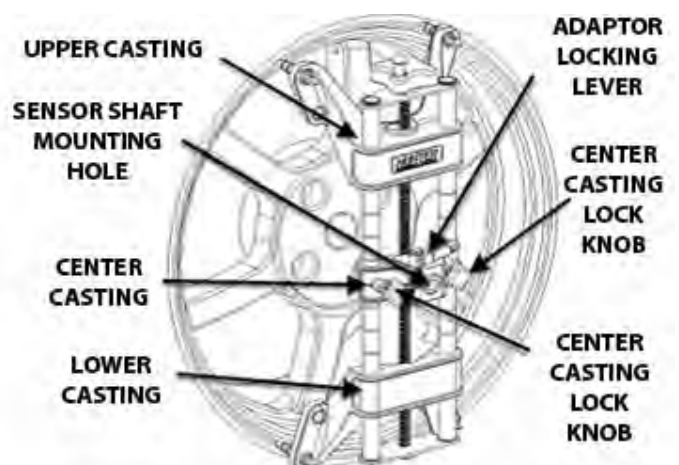


Figure 60

If detached, attach the sensor to the wheel adaptor by inserting the sensor mounting shaft (at the rear of the sensor) into the sensor mounting hole in the middle of the center casting.





The sensor shaft must be fully inserted into the sensor shaft mounting hole.

### **Wheel Adaptor 175-285-1**

Rotate the adaptor locking lever clockwise to the locked position.



When mounting sensors to the wheel adaptors, the sensor shaft must be fully seated. Make certain that there is no play or looseness between the sensor shaft and the wheel adaptor. Rotate the wheel while holding the sensor. Listen and feel for movement between the sensor and wheel adaptor. Runout compensation and alignment accuracy will be adversely affected if there is any movement between the sensor and wheel adaptor. Sensors must fit tightly against the surface of the wheel adaptor or the lock may not hold. This could allow the sensor to fall and be damaged.

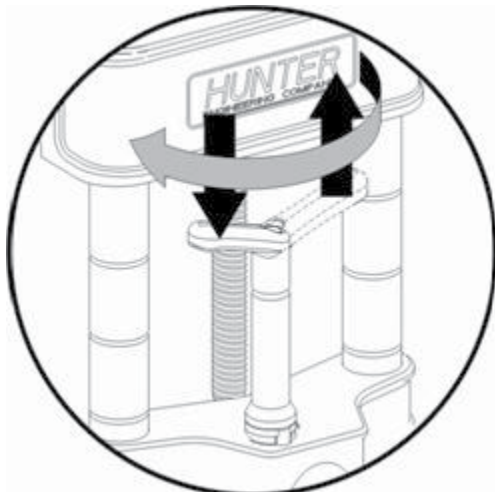
When the sensor is mounted, the sensor locking lever should be rotated using firm hand pressure. Tools should not be used to force the locking lever.

### **Wheel Adaptor 175-321-1 with Ratchet Adaptor Locking Lever**

Rotate locking lever clockwise to tighten. If upper casting prevents rotation of lever, either expand adaptor to move upper casting or re-position the lever by lifting lever up to disengage, rotating counter-clockwise, and lowering to re-engage.

Proceed until the shaft is locked tight to adaptor.

With shaft fully locked, re-position the lever to the 9 o'clock position by lifting lever up to disengage, rotating to 9 o'clock, and lowering to re-engage.



Re-position lever to 9 o'clock

The lever in the 9 o'clock position eliminates possible contact with upper casting or sensor during alignments.

### **Operation of Ratchet Adaptor Locking Lever after Initial Setup**

To remove the sensor or reposition a target, loosen the lock by turning the lever counter-clockwise to the 3 o'clock position.



Figure 61 - To loosen, turn lever from 9 to 3 o'clock



Figure 62 - To lock, turn lever from 3 to 9 o'clock

To lock the sensor or target, tighten the lock by turning the lever clockwise to 9 o'clock position.

**!** Failure to follow tightening and loosening procedures may result in damage to lever. Upper casting can damage lever if contact occurs when going for a large to small diameter rim.

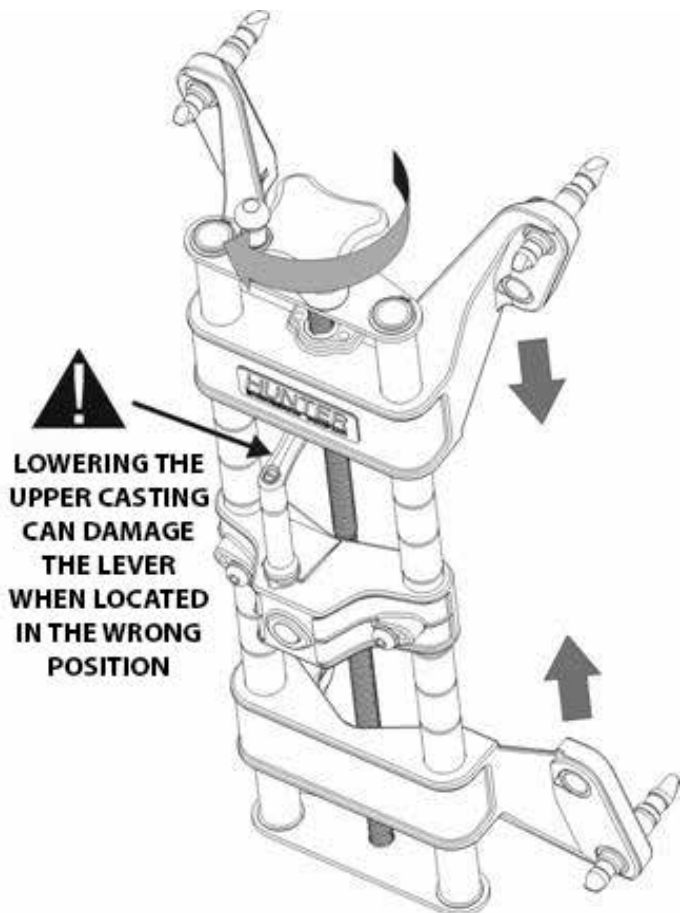


Figure 63

### ***Mounting Wheel Adaptor onto Wheels***

#### **Wheels without Rim Lip (Attaching to Outer Rim Lip)**

Position the wheel adaptor with the two upper external rim studs on the outside of the wheel rim.

Align the two lower external rim studs on the outside of the wheel rim and check that all four rim studs will engage the outside of the wheel rim.

Turn the adaptor adjustment knob to firmly attach the adaptor to the wheel.

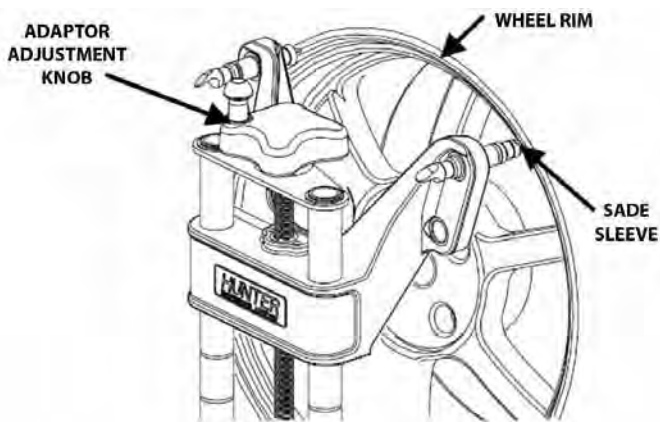


Figure 64

Test the security of the installation by lightly tugging on the wheel adaptor.

**!** Do not allow the rim studs to slip on the wheel. Runout compensation and alignment accuracy will be adversely affected if the wheel adaptor is allowed to slip on the wheel.

#### **Wheels with Rim Lip (Attaching To Inner Rim Lip)**

Position the wheel adaptor with the two lower rim studs engaging the lower wheel rim lip.

Align the two upper rim studs with the upper wheel rim lip and check that all four studs will engage the inner portion of the rim lip.

Turn the adaptor adjustment knob to firmly attach the adaptor to the wheel.

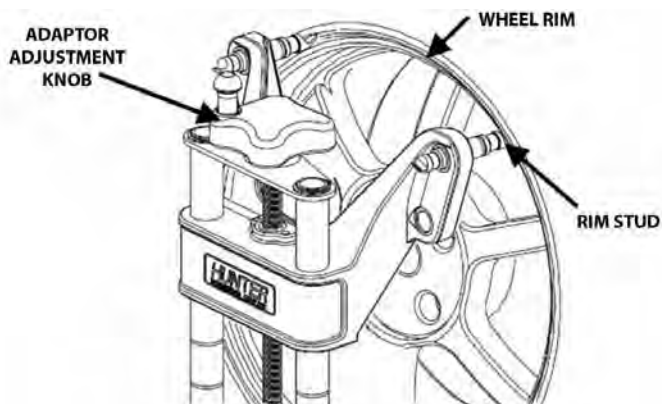


Figure 65

Test the security of the installation by tugging on the wheel adaptor.



Do not use rim studs on alloy or clear coat wheels. Rim studs can damage these wheels.



Do not allow the rim studs to slip on the wheel. Runout compensation and alignment accuracy will be adversely affected if the wheel adaptor is allowed to slip on the wheel.

### **Connecting Sensor Cables with Optional Rack Wiring Kit**

Connect each sensor to a rack wiring box with short sensor cables (either connector may be used).

Connect a front rack wiring box to the console with a long sensor cable (any available connector may be used).

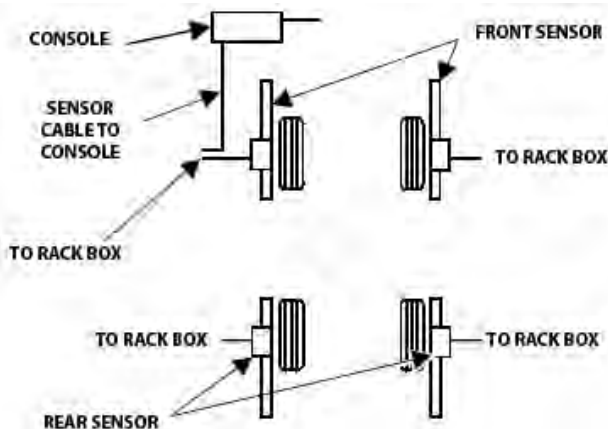


Figure 66

### **Connecting Sensor Cables without Optional Rack Wiring Kit**

Connect the two rear sensors to the front sensors using sensor cables (either front sensor connector may be used).

Connect the two front sensors to the console using sensor cables (any available console cable socket may be used).

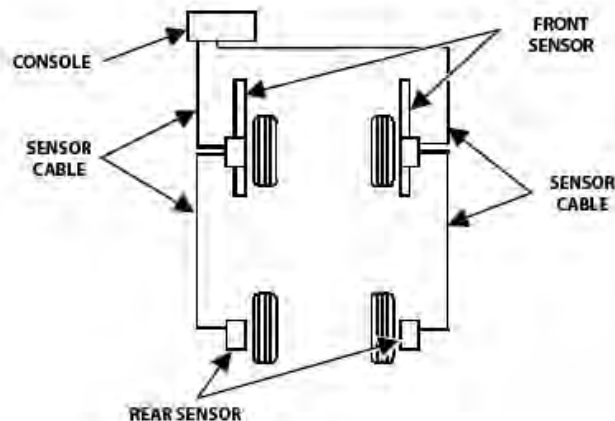


Figure 67

### **Compensating Conventional Sensors - General Compensation**

The sensors must be compensated to eliminate error in angle measurements caused by runout of the wheel and wheel adaptor.

The default setting for the alignment console is set for 3-point compensation. The default setting can be changed in "Aligner Setup" for either 2-Point compensation or 3-Point compensation (Pro-Comp® compensation).

The operator still has the option to override the default setting by adding 2-point compensation and rolling compensation in "Aligner Setup" under the "Sensors" heading - "Compensation Options".

When these compensation options are added, softkeys will be available during the compensation procedure.

If a sensor that has been compensated should require re-compensation, pressing the compensate button twice within four seconds will begin the new procedure.

When pressing the sensor compensate button, momentarily depress (do not hold the compensate button). Also, do not disturb the sensor until the red LED responds.

Sensors may be compensated in any order; however, these precautions must be followed:

If a sensor is removed from a wheel, that sensor must be re-compensated when reinstalled. The other sensors do not need re-compensation.

During 2-point compensation and normal operation of conventional sensors, be certain

no obstructions are blocking the infrared beams between sensors. Should a blockage occur, the affected sensor(s) shown on the illustration on the monitor will flash on and off and the displayed toe measurement of the sensor(s) will go blank until the obstruction is cleared.

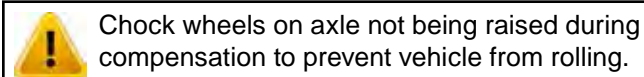
When compensating sensors mounted to the vehicle drive wheels, place the transmission in NEUTRAL.

The lift rack should be level on leveling legs.

### **3-Point Compensation**

Not all sensors need to be mounted before starting compensation. The sensors may be mounted and compensated individually or compensation may be performed on 1, 2, 3, or all 4 sensors at once.

Raise either the front or rear wheels.



Select any one of the sensors for compensation. The starting position of the wheel adaptor does not matter. The green LED will be lit.

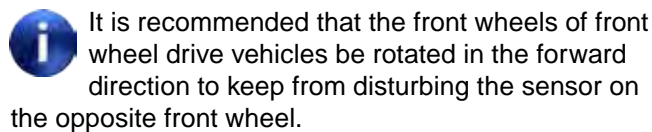
Snug down the sensor lock knob.

Rotate the wheel until the sensor is level (as indicated by the level on top of the sensor).

Press the compensate button. Do not disturb sensor until the red LED begins to blink and the green LED turns off, indicating that the measurements have been stored.

Loosen the sensor lock knob.

Rotate the wheel 120 degrees until the green LED comes on. Snug down the sensor lock knob and rotate the wheel to level the sensor.



With the green LED on, press the compensate button. Do not disturb the sensor until the red LED begins to blink faster and the green LED turns off to indicate that the measurements have been stored.

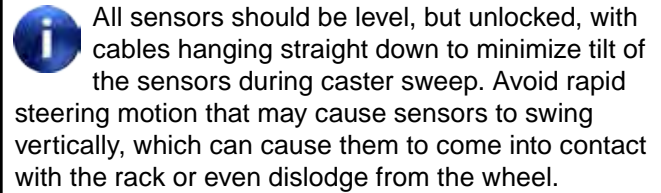
Loosen the sensor lock knob.

Rotate the wheel 120 degrees more until the green LED comes on. Snug down the sensor lock knob and rotate the wheel to level the sensor.

With the green LED on, press the compensate button. Do not disturb the sensor. Wait for sensor to save measurement. The red LED and the green LED will stay on.

Loosen the sensor lock knob.

The sensor is now compensated. Repeat this procedure for the remaining sensor(s).



Remove the lock pins from the turning angle gauges and rear slip plates.

Apply the parking brake and place the transmission in park.

Lower the vehicle onto the turning angle gauges.

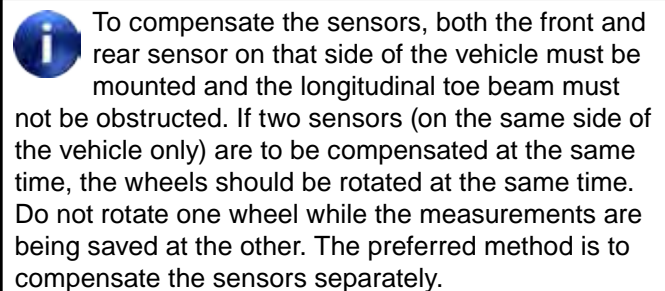
Jounce the vehicle.

3-Point compensation is complete. The green LED and red LED on each sensor will be lit.

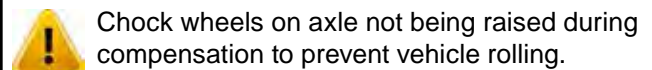
After 3-point compensation, the wheel may be rotated to any position without affecting the alignment measurements.

Continue the alignment procedure.

### **2-Point Compensation**



Raise either the front or rear wheels of vehicle.



Loosen the sensor lock knobs of all the sensors.

Select any one of the sensors for compensation. The green LED will be on.

Rotate the wheel adaptor to any desired position. Compensation should preferably begin (and end) with the wheel adaptor in the vertical position to provide a visual indication that the vehicle wheel has not rotated.

Snug down the sensor lock knob.

Rotate the wheel until the sensor is level (as indicated by the level on top of the sensor).

Press the compensate button. Do not disturb the sensor until the red LED begins to flash and the green LED turns off indicating that the measurement has been saved.

Loosen the sensor lock knob.


Rotate the wheel 180 degrees until the green LED comes on. When the green LED is on, snug down the sensor lock knob and rotate the wheel to level the sensor.

Press the compensate button. Do not disturb the sensor. Wait for the sensor to save the measurement. The red LED and green LED will stay on, indicating that the measurement has been saved and compensation is complete.

Loosen the sensor lock knob.

The sensor is now compensated. Repeat this procedure for the remaining sensor(s).

When using the 2-point compensation method, the wheel adaptor must remain in the same rotational position as it was when its compensation was completed.

 All sensors should be level, but unlocked, with cables hanging straight down to minimize tilt of the sensors during caster sweep. Avoid rapid steering motion that may cause sensors to swing vertically, which can cause them to come into contact with the rack, or even dislodge from the wheel.

Remove the lock pins from the turning angle gauges and rear slip plates.

Apply the vehicle parking brake and place the transmission in park.


Lower the vehicle onto the turning angle gauges.


Jounce the vehicle.

2-Point compensation is complete. The green LED and red LED on each sensor will be on.

Continue the alignment procedure.

## Rolling Compensation

 This procedure can be performed using the 3-point compensation method.

 This procedure should be performed only on a pit-installed rack and should not be performed on a lift or above ground rack. The vehicle could roll off the lift or rack, causing severe personal injury and damage to the vehicle or rack.

From the "Compensation Control" pop-up screen, press "Use Rolling Compensation". The "Rolling Compensation" pop-up screen will appear.

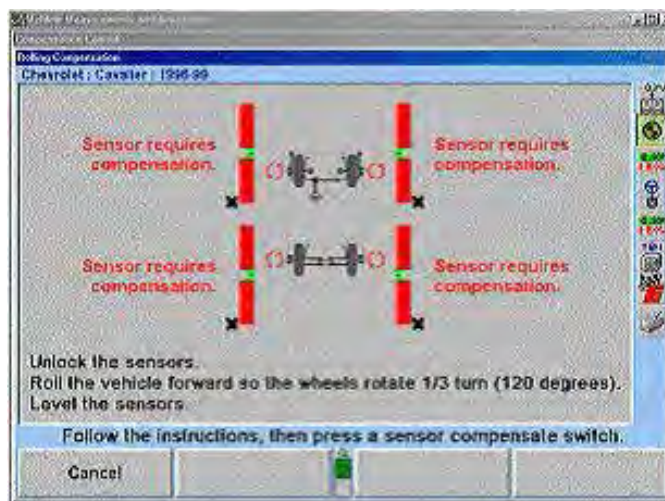



Figure 68

### Rolling Compensation for Conventional Sensors- 3-Point Procedure

Position the vehicle so that it can be rolled forward with the wheels able to rotate 240 degrees.

Level and lock the sensors, then press "Ready". When the sensors are stable, the measurements will be saved.

 Beginning the rolling compensation procedure removes any compensation from the sensors.

The screen instructs you to roll the vehicle forward so the wheels rotate 180 degrees. Vertical bar graphs show when this is correct. Unlock the sensors and roll the vehicle forward until the arrows are in the null position.

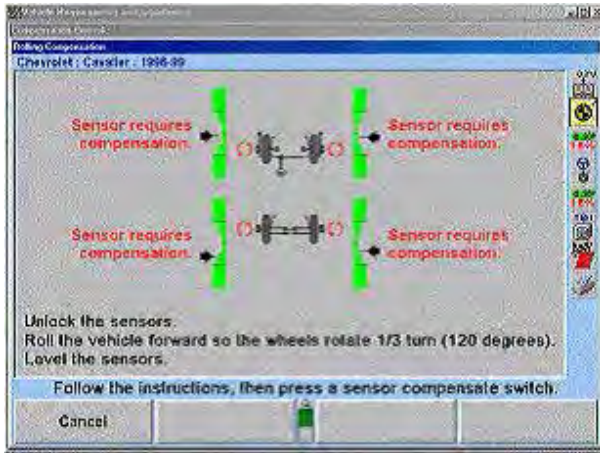


Figure 69


Level and lock the sensors. The green LED must be on at each sensor.

Press and release the compensate switch on any ONE sensor. When the sensors are all stable, the measurements will be saved.

The screen instructs you to roll the vehicle forward so the wheels rotate 120 degrees. Vertical bar graphs show when this is correct. Unlock the sensors and roll the vehicle forward until the arrows are in the null position.

Level and lock the sensors. The green LED must be on at each sensor.


Press and release the compensate switch on any ONE sensor. When the sensors are all stable, the measurements will be saved. The "Rolling Compensation" pop-up screen will close.

 The 3-point rolling compensation procedure need not end with the vehicle in the proper position to adjust the alignment. The wheels are allowed to rotate after the procedure is performed.

### **Rolling Compensation - 2-Point Procedure**

Position the vehicle so that it can be rolled forward, with the wheels able to rotate 180 degrees.

Level and lock the sensors, then press "Ready". When the sensors are stable, the measurements will be saved.

 Beginning the rolling compensation procedure removes any old compensation from the sensors.

The screen instructs you to roll the vehicle forward so the wheels rotate 180 degrees. Vertical bar graphs show when this is correct. Unlock the sensors and roll the vehicle forward until the arrows are in the null position.

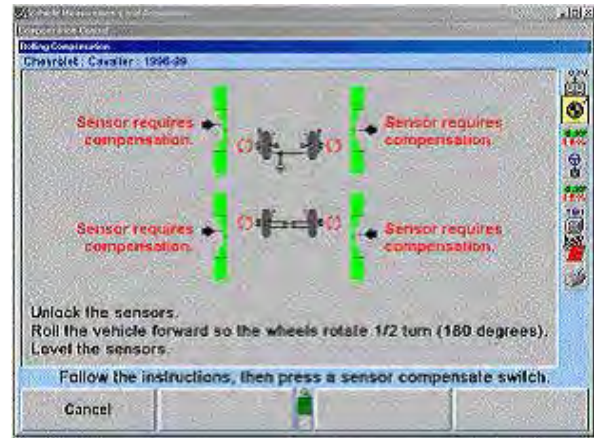



Figure 70


Level and lock the sensors. The green LED must be on at each sensor.

Press and release the compensate switch on any ONE sensor. When the sensors are all stable, the measurements will be saved.

The "Rolling Compensation" pop-up screen will close.

 The 2-point rolling compensation procedure MUST end with the vehicle in the proper position to adjust the alignment. The wheels are NOT allowed to rotate after the procedure is performed.

### **Procedure Limitations**

 This procedure must be performed very carefully, or inaccurate alignment measurements will result. The axles must always point exactly the same direction during the procedure. A change in the pointing direction of an axle during the procedure will be interpreted by the system as runout.

- Do not allow the front wheels to change their "steering" direction as the vehicle is rolled.
- Do not perform the procedure on a bumpy or uneven surface.
- Do not perform the procedure on a vehicle that has uneven or out-of-round tires.
- Do not push or pull the vehicle by the tires or wheels during the procedure.
- Push the vehicle only forward during the procedure. Do not push the vehicle forward, then backward.
- Do not use the brakes during the procedure.

## **Compensating Camera Based Targets**

### **General Compensation**

The camera based sensors must be compensated to eliminate errors in angle measurements caused by runout of the wheel, wheel adaptor, and target shaft.

The default setting for the alignment console can be set for either rolling or jacking compensation.

When using Jacking Compensation, targets may be compensated in any order; however, these precautions must be followed:

If a target is removed from a wheel, that target must be re-compensated when reinstalled. The other targets do not need re-compensation.

When compensating targets that are mounted to the vehicle drive wheels, place the transmission in NEUTRAL.

The lift rack should be level on the leveling legs when the legs are present on the lift.

The lock pins must be in place on the turnplates and rear slip plates during rolling target compensation.

### **About Rolling Compensation**

When performing rolling compensation with Hunter Camera Based Targets (or any alignment sensors), follow these guidelines to obtain the best results.

### **Perform a vehicle inspection before beginning alignment**

Inspect vehicle for loose or worn parts that may prevent proper alignment.

WinAlign® software will notify the operator if the vehicle has excessive total toe with Roll-Check®. Excessive total toe is a good indication of loose or worn parts.

Do not perform the procedure on a vehicle that has uneven or out-of-round tires.

Changing to Live Planes within WinAlign software will compensate for uneven tires during the alignment. The vehicle's on-road performance will still be adversely affected by uneven tires.

Properly set tire pressure before performing procedure.

Changing to Live Planes within WinAlign software will compensate for improperly set tire

pressure during the alignment. The vehicle's on-road performance will still be adversely affected by improper tire pressure.

### **Practices to follow for best results**

Have the wheels in the straight-ahead position, as the wheels typically are after driving the vehicle onto the lift.

WinAlign software will notify the operator if the vehicle is not steered straight-ahead. Roll-Check screen appears and helps the operator straighten the wheels.

Watch for changes in the steering direction as the vehicle is rolled. If steering direction changes are noticed, re-compensate using a steering wheel holder.

On Hunter Lifts, position a turnplate bridge, Kit 20-1471-1, within the gap behind each turnplate to create a smooth rolling surface.

The alignment lift should be level to place the vehicle's suspension and steering systems in their neutral positions.

Changing to Live Planes within WinAlign software will compensate for an alignment lift that is not level.

Roll the vehicle by rotating the left rear tire. Changes in the vehicles path and ride height are avoided by moving the vehicle with the left rear tire. The vehicle can also be rolled with the right rear tire if enabled in setup. *Refer to "Push From Left or Right Side," on page 195 for detailed instructions.*

### **Rolling Compensation**

The default setting for Camera Based compensation is "Rolling Compensation using the Virtual View". With this setting the compensation screen will automatically proceed to Rolling Compensation. If Jacking Compensation has been changed to the default setting from the "Compensation Control" pop-up screen, press "Use Rolling Compensation". The "Rolling Compensation" pop-up screen will appear. Rolling compensation can be performed in VirtualView®, or using traditional bar graphs.



Figure 71

Verify that the pins are in the turnplates and slip plates. Position a turnplate bridge in each pocket behind the turnplate so the runway surface and the bar surface are flush. Rotate the bridges so they are taller than wide.

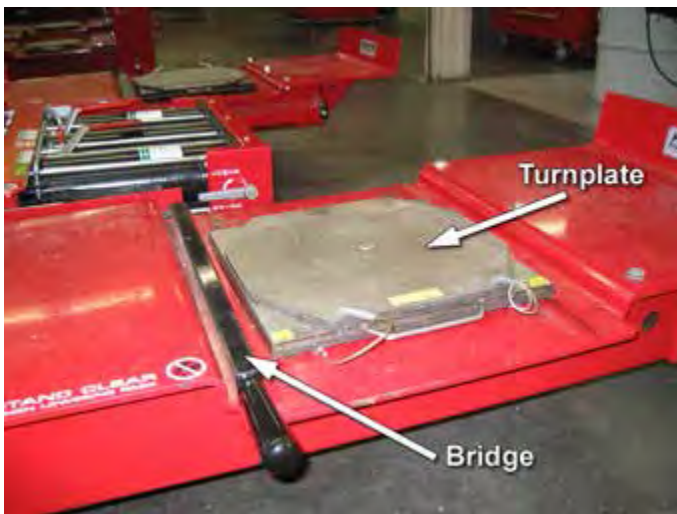


Figure 72

Place wheel chocks that limit rearward motion approximately 15 inches behind rear wheel(s).

Steer ahead.

Mount the targets and wheel adaptors on the wheels. Refer to "Mounting Sensors or Targets Onto Wheel Adaptors."

**i** Once the targets are leveled (for compensation), they should not be re-leveled at any time during the alignment. If the target is removed from the wheel or adaptor during the alignment, it must be re-leveled and recompensated, using jacking compensation.

**i** Beginning the rolling compensation procedure removes any previous compensation from the targets.

**i** It is recommended to roll the vehicle by rotating the left rear tire. Do not push or pull the vehicle by the front (steering axle) tires or wheels during rolling compensation. Do not push or pull on spoilers, fascia moldings, or other trim accessories.

The screen instructs you to roll the vehicle rearward. Release parking brake and put transmission in neutral. Roll the vehicle rearward until the bar graph turns green.

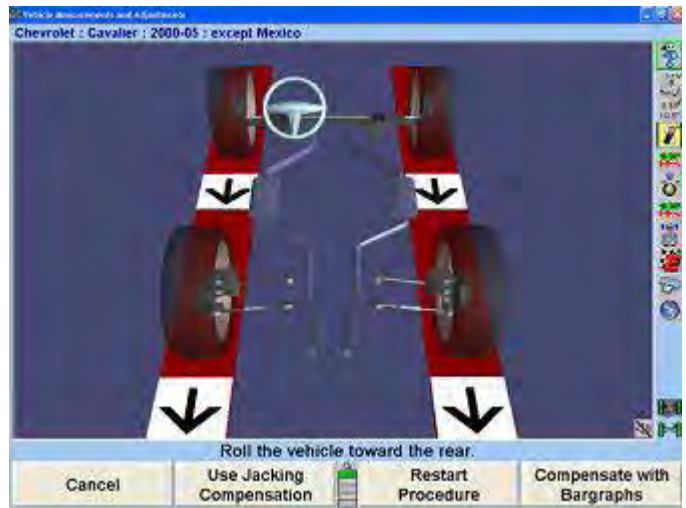


Figure 73

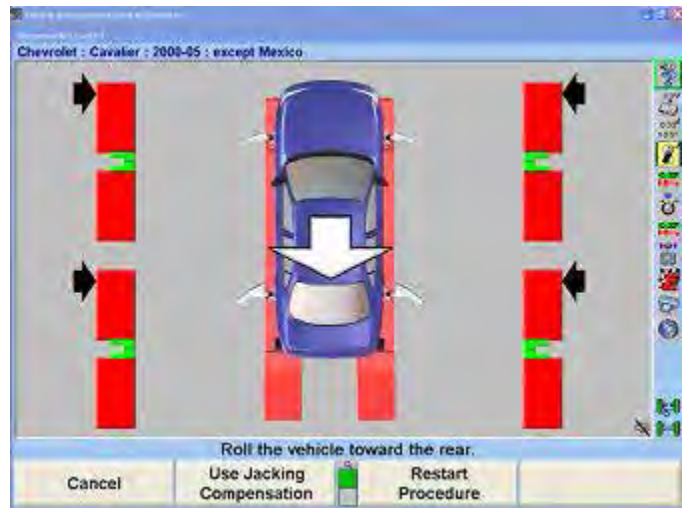


Figure 74



**i** A vehicle with 28 inch diameter tires will require approximately 12-14 inches of movement. Smaller diameter tires will require less movement, while larger diameter tires will require more.

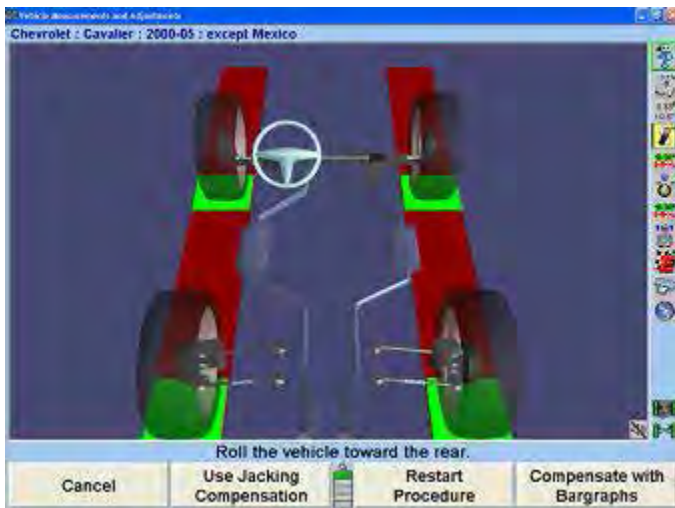


Figure 75

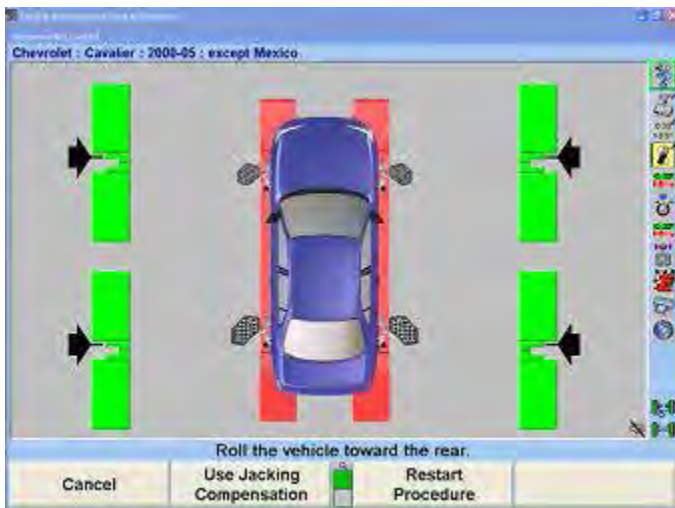


Figure 76

Stop rearward movement of the vehicle. The bar graph (arrow) will disappear for a moment.

If a remote indicator is used, indicators for all four wheels will be flashing, indicating to roll forward.

When the compensation bar graph (arrow) reappears, roll the vehicle toward the front until the bar graphs are green.

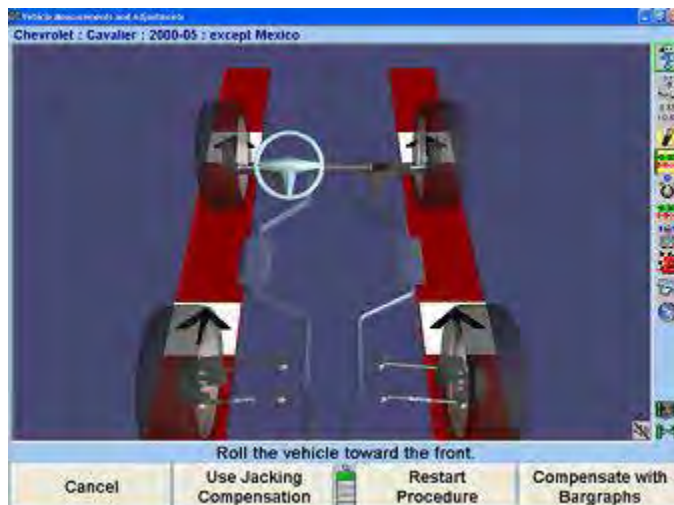


Figure 77 - Roll Vehicle forward

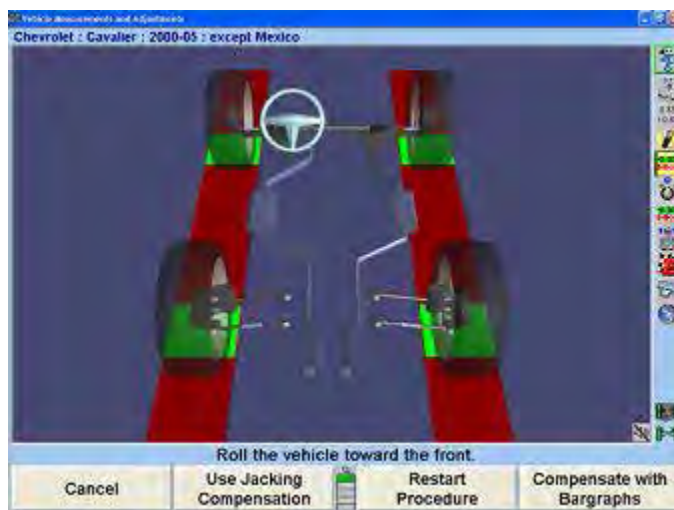


Figure 78

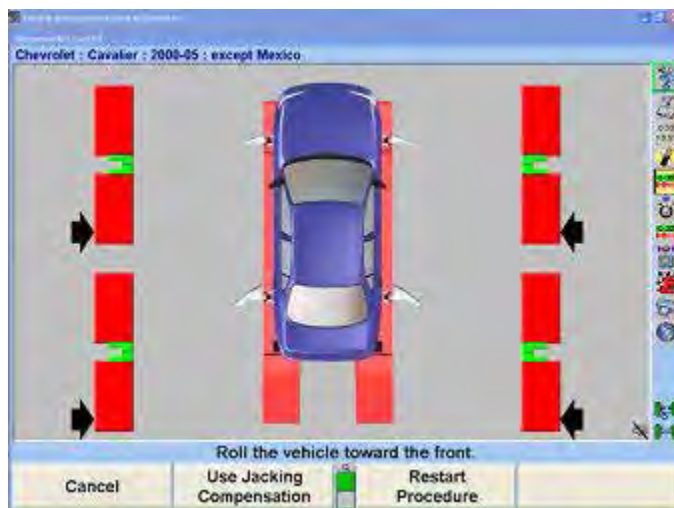


Figure 79 - Roll forward, alternate view

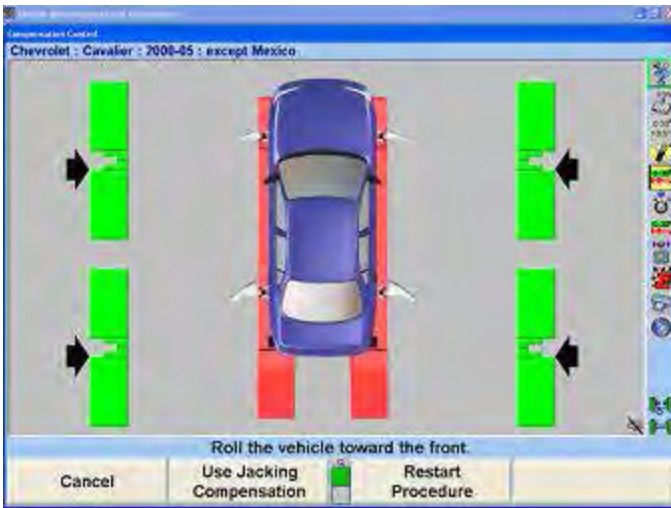


Figure 80

When all four targets have been compensated, apply the vehicle parking brake and place the transmission in park, if applicable. On standard transmission vehicles, the transmission should be placed in neutral.

Position chocks at the front and rear of the left rear tire to keep the vehicle from rolling.

**i** The rolling compensation procedure **MUST** end with the vehicle in the proper position to check and adjust the alignment. The targets are **NOT** allowed to rotate after the procedure is performed.

After the targets have been compensated, final compensation instructions will appear.



Figure 81

If not already done, block the wheels, then remove the pins from the turnplates and slip plates.

Remove or rotate the turnplate bridges so they are wider than tall.

**i** On Hunter lift racks, the turnplate bridges can be stored in the same gap behind the turnplates. Rotate the bridges so they are wider than tall. Rotating the bridges is necessary to prevent interference with turnplate movement.

Rolling compensation is complete.

### **Roll Check® Measurement Feature**

After performing rolling compensation, it is necessary that the vehicle is steered ahead and that Total Toe is not excessive. Roll Check® verifies that both of these conditions have been met. If either of these conditions has not been met, then a pop-up screen appears stating that the rolling compensation that has just been performed may not be accurate.

One of the two following messages with options might appear after rolling compensation:



Figure 82 - The vehicle is not steered ahead.

Using the Steer Ahead bar graph, steer the vehicle to straight ahead and then press

“Restart Procedure” OR press “Use Jacking Compensation”.



Figure 83 - Total Toe is larger than the preset tolerances.

Adjust Total Toe and press “Restart Procedure” OR press “Use Jacking Compensation”.

### Jacking Compensation

When using Jacking Compensation, targets may be compensated in any order; however, these precautions must be followed:

If a target is removed from a wheel, that target must be re-compensated when re-installed. The other targets do not need re-compensation.

When compensating targets that are mounted to the vehicle drive wheels, place the transmission in NEUTRAL.

The lift rack should be level on the leveling legs (if present).

It is not necessary for all targets to be mounted before starting compensation. The targets may be mounted

and compensated individually, or compensation may be performed on one, two, three, or all four targets at once.



Figure 84

Raise the axle requiring compensation while remembering to use the safety on all jacks.

Mount the targets and wheel adaptors on the wheels. Refer to the section “Mounting Targets.” After the target is mounted, press “Ready”.

The screen will change as shown below.

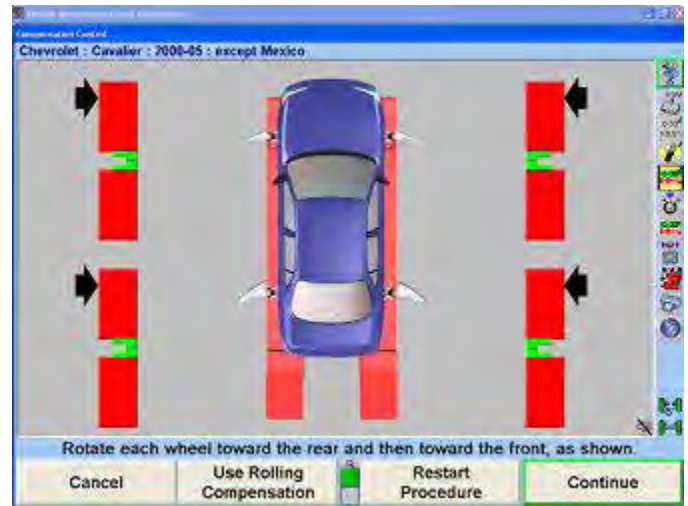


Figure 85

Rotate the wheel being compensated toward the rear of the vehicle (as if the vehicle were moving rearward).

When the bar graph that corresponds to the wheel being compensated turns green, stop rotating the wheel. The bar graph will disappear for a moment.

When the bar graph reappears, rotate the wheel toward the front of the vehicle (as if the vehicle were moving forward) until the bar graph turns green again. If

compensation was completed properly, the bar graph will disappear.

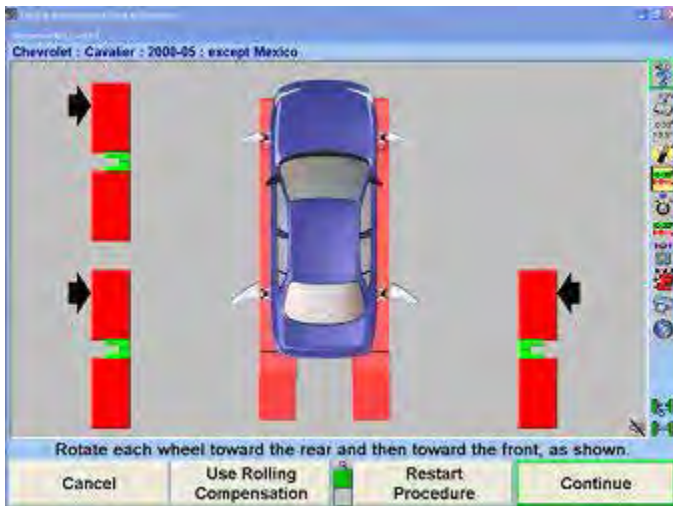


Figure 86

The target is now compensated. Repeat this procedure for any remaining target(s).

After the targets have been compensated, final compensation instructions will appear.



Figure 87

Remove the lock pins from the turnplates and slip plates.

Apply the parking brake and place the transmission in park, if applicable.

Lower the vehicle onto the turnplates and rear slip plates.

Jounce the vehicle.

Jacking compensation is complete.

## 2.3 Vehicle Specifications

The “Vehicle Specifications” primary screen shows the vehicle identification and its alignment specifications.



Figure 88

This primary screen is displayed by pressing “Vehicle Specifications” on any other primary screen. To change to one of the other primary screens, change to the second row of softkey labels, and press the appropriate softkey.

The “Vehicle Specifications” primary screen is used for the following purposes:

- Viewing the identification of the vehicle.

- Viewing the specifications of the vehicle.

- Manually entering the specifications of the vehicle.

The “Vehicle Specifications” primary screen is also used for:

- Recalling vehicle specifications from the specification memory.

- Storing vehicle specifications into the specification memory.

- Reading and writing notes which are attached to the specifications of a vehicle.

- Setting the display units and formats for specifications and measurements.

### **Primary and Secondary Specification Groups**

The specifications and tolerances are shown in two different groups:

Primary Specifications are the usual camber caster total toe and thrust angle specifications and tolerances.

Secondary Specifications are SAI, toe-out-on-turns and maximum steering angle specifications and tolerances.



Figure 89

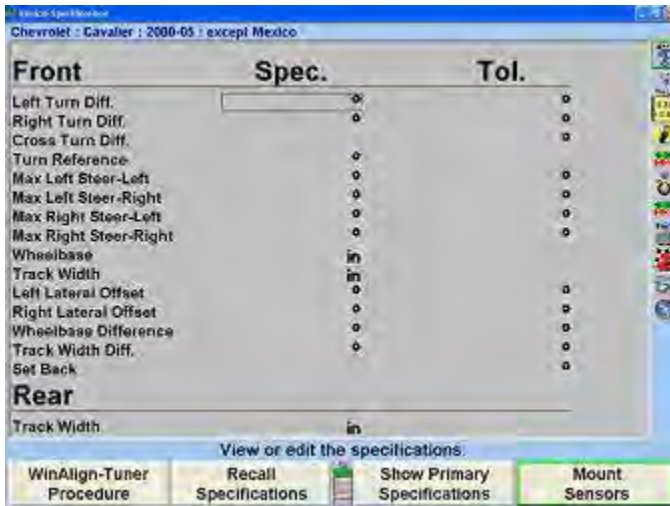


Figure 90

You may select “Show Primary Specifications” or “Show Secondary Specifications” from the “Vehicle Specifications” primary screen. “Secondary Specifications” displays both the front and rear axle. “Secondary Specifications” can be accessed from any primary screen where the “Show Vehicle Specifications” softkey is available.

## Vehicle Specification Memory

The “Recall Specifications” pop-up screen allows vehicle specifications to be recalled and stored in the specification memory.

The “Recall Specifications” pop-up screen is displayed by pressing “Recall Specifications” on the “Vehicle Specifications” primary screen.

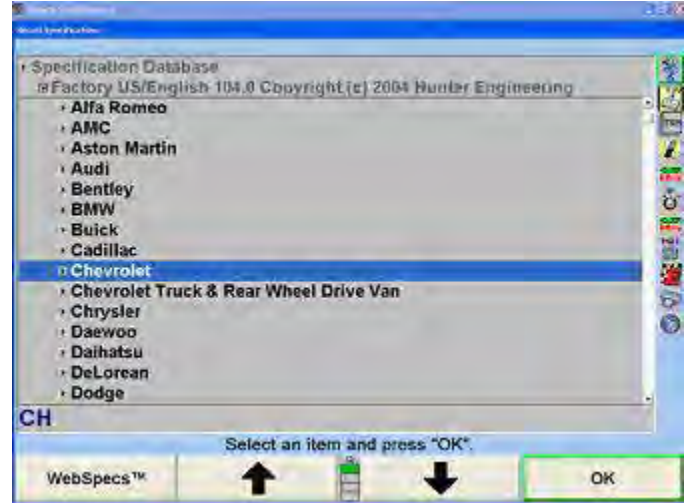


Figure 91

Specifications may be recalled from “Factory Specifications”, based on original equipment manufacturer specifications, “Factory Amendments”, or “User Specifications”. “Factory Amendments”, and “User Specifications” are created and stored into the computers memory by the equipment operator.

Although the specification database is extensive, some vehicle manufacturers and/or specific models may not be included in the factory specifications memory. Locate the alignment data in the alignment specification book or vehicle manufacturers’ service manual and manually enter the specifications on the “Vehicle Specifications” display.

The manually entered specifications may be stored in computer memory to be recalled at a later time. Refer to “Selecting User Specifications.”

Pressing “List Abbreviations” identifies a list of abbreviations used in “Factory Specifications”.

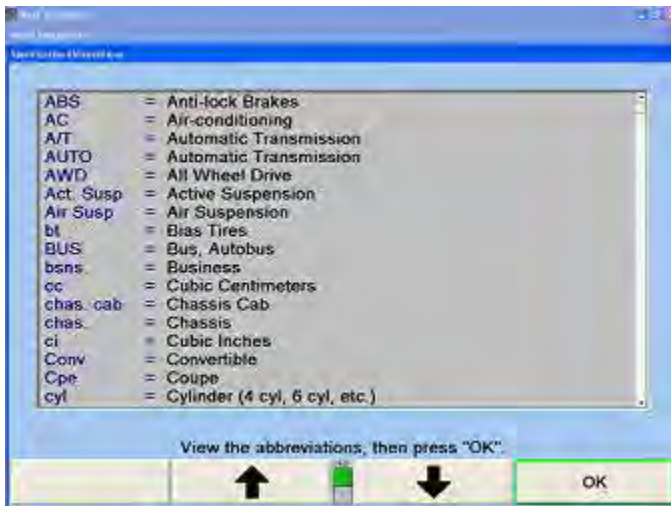


Figure 92

Also displayed in “Recall Specifications” is the “Quick List”. The “Quick List” displays all the vehicles most recently worked on, as shown below.

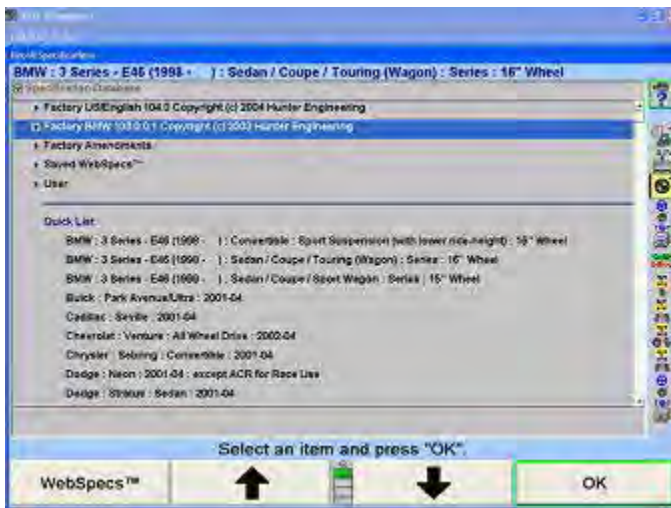




Figure 93

The “Quick List” is not erased, but each new vehicle entry overwrites an older entry.

### Vehicle Recall Specifications Selection

To recall the specifications from the specification database, begin by pressing  or  to highlight the manufacturer of the vehicle being aligned. Press “OK” to select the highlighted manufacturer. The screen will change to show the models available for the selected manufacturer.

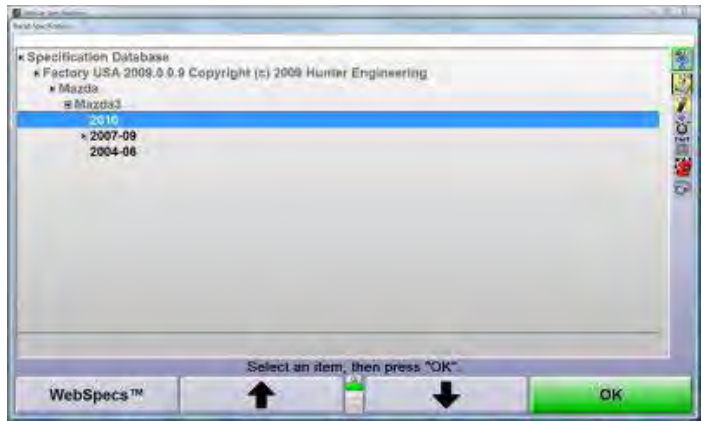




Figure 94

Press  or  to highlight the vehicle model. Press “OK”. Continue in this manner until the vehicle is completely identified. When the vehicle is identified, the specifications will be recalled and the screen will change to the “Vehicle Specifications” primary screen.

At any point in the selection sequence, you can type in the desired selection using the keyboard. For example, when selecting the vehicle manufacturer, you can select “Chrysler” as follows:

- Type “C”; the selection changes to Cadillac.
- Type “H”; the selection changes to Chevrolet.
- Type “R”; the selection changes to Chrysler.

The more letters typed the more accurate the selection. This is also valid within the vehicle make selection.

In Set-up, you may select one of four sequences by which the vehicle is identified.

The four choices are:

- Optimal
- Year, Manufacturer, Model
- Manufacturer, Year, Model
- Manufacturer, Year and Model



### Selecting from the Vehicle Lists

The factory specifications stored in the system are based on industry data available at the time of entry. Because specifications are subject to change, refer to vehicle manufacturer’s service manual and service bulletins if a question arises.



## Selecting User Specifications



The system can store user entered specifications in addition to those contained in the factory specification memory. These specifications may be for older vehicles no longer in the factory specification memory, or a user may modify factory specifications for a specific vehicle. These specifications may be recalled and used during an alignment.

To recall specifications from the "User" specification memory, the "Recall Specifications" pop-up screen must be currently displayed:

Press  or  to highlight Specification Database.

Press "OK". The screen will change to a list of possible database selections.

Press  or  to select "User" and press "OK". The screen will change to list user entered specifications.

Press  or  to highlight the desired item and press "OK". The vehicle specifications will be retrieved from the "User" specification memory. When the specifications have been retrieved, the screen will change to display those specifications.

## Entering and Editing Specifications

If specifications for a vehicle are not included in the factory specifications memory, the alignment information must be found in the alignment specification book and entered manually. It may be necessary to change the specification or tolerance of an existing specification.

To change or enter a value on the Vehicle Specifications display, press "Select Next Value" or "Enter" to advance to the desired field. Enter the new specification and press


"Select Next Value" or "Enter" to replace the existing specification.



Figure 95

Tolerances must not be 0.

Specifications may be entered as whole numbers (1), whole numbers and fractions (1 1/2), fractions (1/2), decimals (0.5), degrees (1.01°), or degrees and minutes (1°30). Use the following methods to enter alignment specifications using the current display units.

 Display units (i.e. degrees to inches, degrees to degrees and minutes, etc.) can be changed from the Vehicle Specifications primary screen. Refer to "Selecting Display Units."

Use the Space key to separate whole numbers and fractions.

For example, 2 1/2° would be entered as,

Press      and "Select Next Value".

Use the Space key to separate degrees and minutes.


For example, 2° 15' would be entered as,

Press     and "Select Next Value".


If the degrees and minutes specification is less than 1°, enter a 0 for degrees.

For example, 6' would be entered as,

Press    and "Select Next Value".

 Specifications are assumed to be positive unless the negative (-) sign is positioned before the specification value.

When “Select Next Value” or “Enter” is pressed, the value is entered and the cursor advances to the next entry field.



Values are not entered until “Select Next Value” or “Enter” is pressed.

Specifications and tolerances may be changed at any time during the alignment by pressing Vehicle Specifications and advancing the cursor to the position for the new value to be entered.

### Selecting Specification Formats

Specifications may be displayed in a symmetrical or non-symmetrical manner. Specifications that use an equal tolerance range for an angle such as:

	Specification	Tolerance
Left camber	0.50°	± 0.25°

These are called symmetrical specifications because the tolerance range extremes are equal distance from the preferred specification. This permits a ± value to be used as a tolerance and does not require two placeholders for tolerances. Symmetrical specifications are most common.

Non-symmetrical specifications use an unequal ± tolerance such as:

	Specification	+ Tolerance	- Tolerance
Left camber	0.50°	0.50°	0.30°

The tolerance values require two placeholders on the specification screen because the tolerance extremes are unequal distances from the preferred specification.

Press “Set Spec Format”, if individual + and - tolerance values are to be entered. The screen will change to display a positive and negative tolerance position for each specified angle.



Figure 96

If the format is asymmetric and the “+ tolerance” is not equal to the “- tolerance” for at least one tolerance pair, then the screen cannot be changed to symmetric format. Attempting to do so will generate an error message.

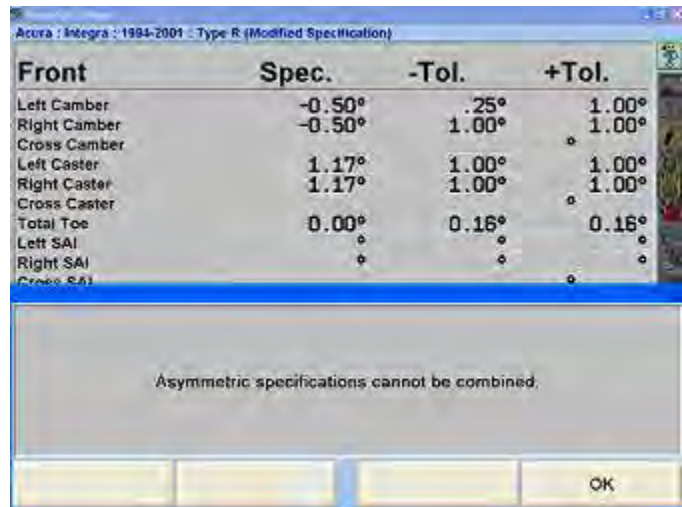


Figure 97

Press “OK” to clear this error message.

### Reducing Tolerances

Tolerances that are too large may allow a less than desirable alignment while tolerances that are too small may make adjustments difficult.

Pressing “Reduce Tolerances” will reduce the specification tolerances to the following:

Front and rear camber tolerance to ± 0.25° (1/4°),


Front caster tolerance to ± 0.50° (1/2°),

Front and rear total toe tolerance to ± 0.06° (1/16°, 0.13° or 1.5 mm depending upon toe units selected).

The actual angle specification will not be altered and only tolerances greater than these will be reduced.

### Specification Notes

A “specification note” is a block of text that may be attached to a vehicle specification and stored with the specifications in the specification memory. The note may be stored with factory specifications, factory amended specifications, or with user specifications.



Some factory specifications may already have a note attached. This might be a technical service bulletin, or some tip that may aid you in selecting the vehicle or adjusting its alignment.



To enter and store a specification note, do either of the following:

Recall the specifications in the usual manner. On the "Vehicle Measurements and Adjustments" primary screen, press "Show Spec Note".

OR

Open the "Recall Specifications" pop-up screen. Select the vehicle, press "OK" for the final selection. The "Show Spec Note" softkey will be available on the screen at this point. Press "Show Spec Note". This allows you to view the note without recalling the specifications.

The "Specification Note" pop-up screen will appear.

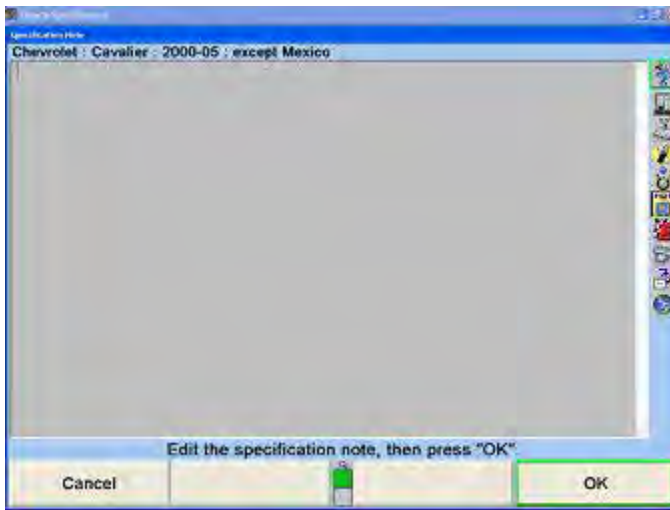


Figure 98

Use the keyboard to type and/or edit the note as desired. Pressing "Cancel" will close the pop-up screen without altering the note. Pressing "OK" will store the note in the specification memory with the vehicle.

If a vehicle in the specification memory has a note attached, it will have a small image of a note with a paper clip next to it in the "Recall Specifications" pop-up screen.

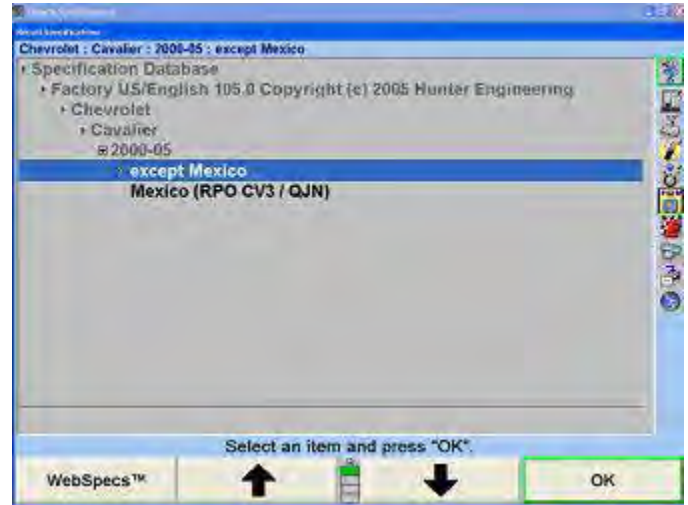


Figure 99

### **Storing User Specifications**

The program can store vehicle specifications that you enter and identify directly.

These specifications can take two forms:

They can be manually entered onto a blank specification screen.

They can be derived from a factory specification by recalling and then editing the specifications for a vehicle.

The specifications can then be stored in two locations:

If they were manually entered onto a blank specifications screen, they can be stored in "User" specification memory.

If they were derived from a factory specification, they can be stored in "User" specification memory or they can be stored in the "Factory" specification memory as an "Attachment" to the factory specification.

To store a specification:

On the "Vehicle Specifications" primary screen, press "Clear All Specifications". Then manually enter the specifications in the usual manner.

OR

Recall the vehicle specifications from the specification memory. Then manually edit the specifications as needed. This derives the specifications from the factory specifications.

When the specifications are ready to store, press “Store Specifications”. The “Store Specification” pop-up screen will appear.

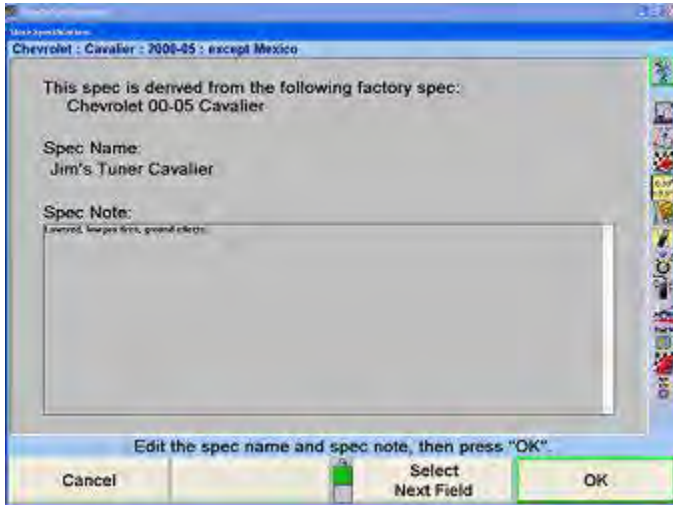


Figure 100

Type in the identification of the vehicle. This is the name of the vehicle that will appear on the “Specification Recall” pop-up screen, and at the top of the “Vehicle Specifications” primary screen.

Press “Next Field” or “Tab”, and the cursor will move to the “Spec Note” field. Type in any desired notes concerning the vehicle, such as Technical Service Bulletin information.

Press “OK”. If the specifications were not derived from a factory specification, they will be immediately stored in the user specification memory. If they were derived from a factory specification, the “Specification Location” pop-up screen will appear. Now you must decide where to store the specification.

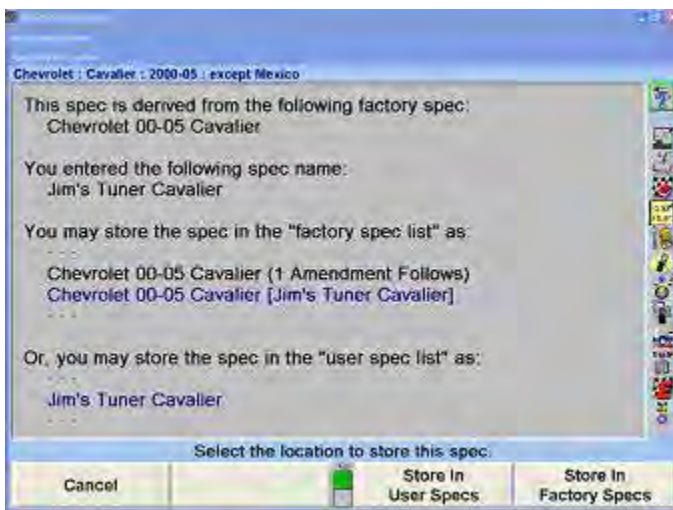


Figure 101

Press “Store In User Specs” or “Store In Factory Specs” to specify the memory where the new specification will be stored.

When saving to User specifications, if the specification ID is already used in the memory, a screen will appear stating “A specification with this ID is already in the database. Do you want to replace it?” Pressing “OK” or “Enter” will replace the specification.

When saving to “Factory” specifications, if the specification ID is already used in the database, the specification will be saved as an AMENDMENT to the factory specification already in memory.

For recalling User Specifications, refer to “Selecting User Specifications.”

### ***Deleting User Specifications***

On the “Recall Specifications” screen:

Press or to select “Specification Database” and press “OK”. The screen will change to a list of possible screen sequences.

Press or to select “User” and press “OK”. The screen will change to list user entered specifications.

Press or to move the cursor to the desired item and press “Delete Specification”. The screen will ask for verification.

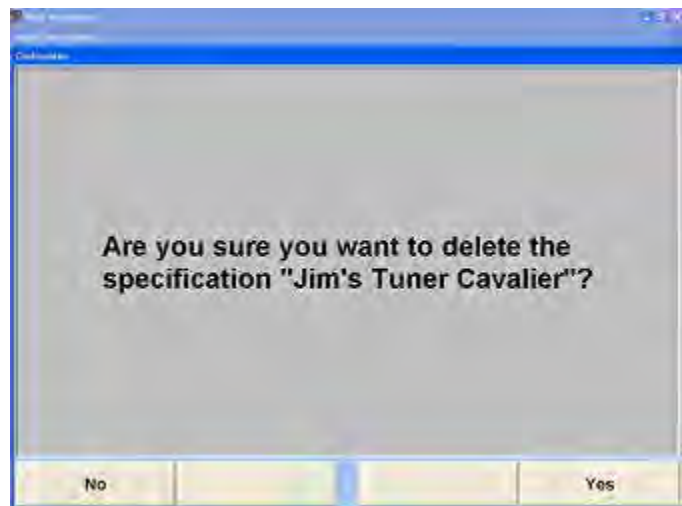


Figure 102

Press “Yes” or “No”.

### ***Factory Amended Specifications***

“Factory Amended Specifications” are specifications that are derived from and stored with a factory specification. The procedure for doing this is discussed in, “Storing User Specifications.”

Select "Show Spec Databases". Then select "Factory Amendments". This displays all vehicles that have a Factory Amended Specification.

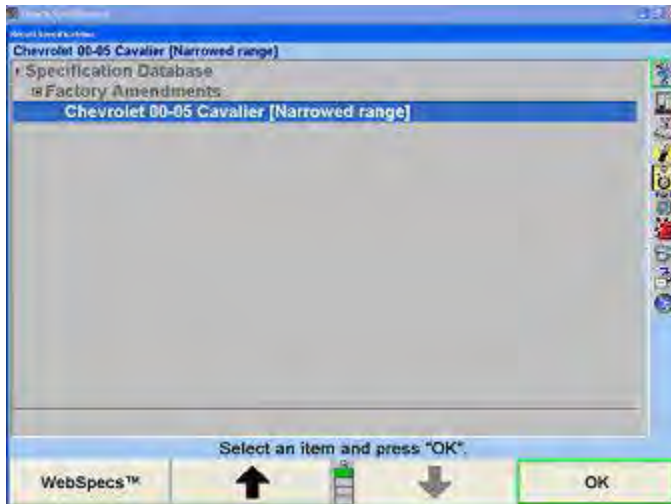


Figure 103

The most likely use of a factory-amended specification is that the manufacturer has issued a Technical Service Bulletin that does one or more of the following:

- It alters the factory specification.
- It details a special service procedure.
- It warns of alignment problems.
- It warns of warranty procedures.

By having a "Factory Amended Specification" in the specification memory, these items are brought to your attention, as you recall the specifications. This way, you do not have to remember the Technical Service Bulletins.

On the "Recall Specification" pop-up screen, when there is an amended specification that is derived from the factory specification of the vehicle being aligned, highlight that specification and view its "Specification Note". This note is intended to explain the use of this specification instead of the factory specification.

If there is a Technical Service Bulletin, store a "Factory Amended Specification" as detailed in "Storing User Specifications." The "Specification Note" should contain the contents of the Technical Service Bulletin.

## 2.4 HunterNet

HunterNet is a subscription based feature of WinAlign® software designed to report alignment and Quick Check results. These results can be viewed by shop management, counter personnel, or emailed to the vehicle owner. Included with a HunterNet subscription is the WebSpecs online specification database.

The service utilizes the Internet to archive results on the Hunter web server. WinAlign connects to the web passing data that contains the complete results of the alignment or QuickCheck. The results are archived on the web server and a database is maintained that associates the results with individual shops. Each shop has its own shop ID. The shop can use their shop ID (and associated password) to log onto a web page that accesses previously saved results from both inside WinAlign and one other device with internet access.

HunterNet can be integrated with the Work Management and Customer Identification features of WinAlign. WinAlign passes customer information from Work Management to HunterNet where the information is stored with the vehicle record.

QuickCheck or Alignment machines logged in to HunterNet under the same user name will allow the results to be compiled together.

Upon activation, WebSpecs is available for use and does not have to be enabled in setup. Refer to "2.5 WebSpecs Online Specification Database" on page 62 otherwise follow the setup procedure below to enable results to be uploaded to HunterNet during the alignment or QuickCheck process.

### ShopResults

When ShopResults is enabled, a new step is added to the end of the alignment or QuickCheck procedure to transfer the results. This step will connect WinAlign to the HunterNet website transferring the alignment results or QuickCheck results.

ShopResults must be enabled within WinAlign. Select "Service Programs" from the Logo screen. Select "Set Up

Aligner”. On the “Aligner Set-Up” screen, scroll down to “HunterNet Items” and select “ShopResults.NET”.

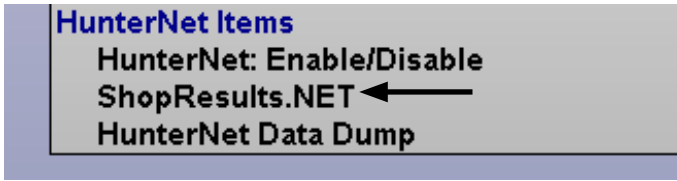


Figure 104

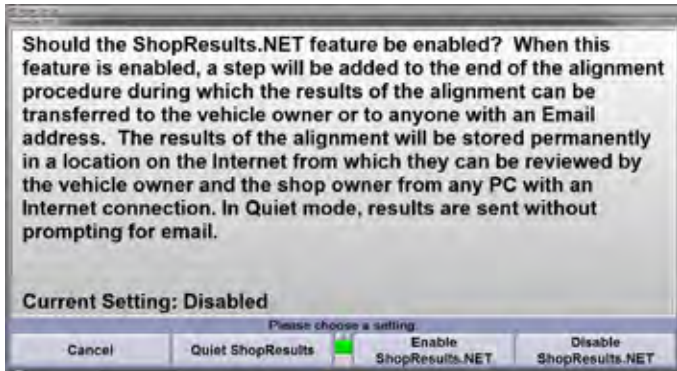


Figure 105

Select “Enable ShopResults.NET”. The ShopResults.NET icon will now appear at the end of the procedure bar.

### Quiet ShopResults

When Quiet ShopResults is enabled in setup, results are sent to HunterNet without the web page display.



Figure 106

### Sending Alignment Results to the Hunter Web Server



For best results, “Work Management” or “Edit Customer Identification” should be enabled by Setup as part of the Alignment Procedure. This streamlines the process adding the customer’s information to the online viewable results automatically. For more information on Setup, Work Management, and Customer Identification refer to Form 3850T, WinAlign® Software Operation Instructions, or the online Help within WinAlign, or Form 4307-T, WinAlign Quick Reference.

Within WinAlign®, the technician will identify the customer either through “Work Management” or on the “Edit Customer ID” screen. This will add the customer information to the data being saved on the web server

allowing for personalization of the results. The results can also be sent to the database without this information.

When ShopResults.NET™ has been enabled in Setup a field for the email address is automatically included on the “Edit Work Order” and “Edit Customer Identification” screens.



Figure 107 - Work Management Screen

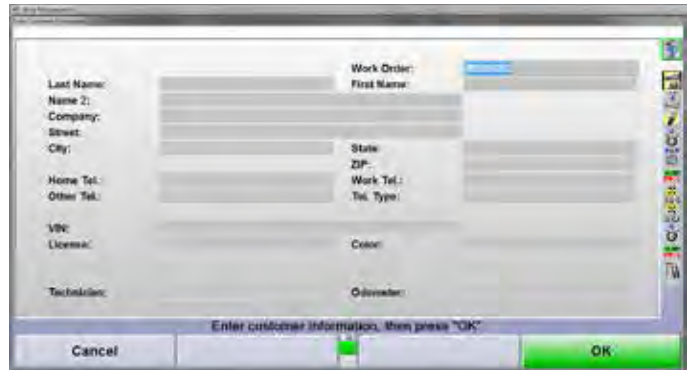



Figure 108 - Customer Identification Screen

Continue with the alignment process. When the alignment has been completed, the final step of the alignment procedure will be “Send Alignment Results to the NET”.

This step will connect to the Hunter web server that accepts the alignment results that contains the results of the alignment, the shop information, and the customer information, if it was included. This step is automatically performed after the alignment results have been printed.

NOTE: The results can be sent at any point of the

alignment procedure by selecting the  icon at the bottom of the alignment taskbar.

### Sending Alignment Results

When the technician reaches the “Send Alignment Results to NET” procedure step, WinAlign® will create a data file and access the Hunter web server. The alignment results will then be archived (uploaded) to the web server.

## Logging On to HunterNet® Online Service



The following is an overview, for a detailed guide to HunterNet, refer to form 6488-T.

When the user clicks on the “Send Results to Net” icon at the end of the procedure bar or when an alignment has been completed, they will be asked to enter their shop ID and password. If the user chooses to save the password, then the user will never need to re-enter it.

### Initial Setup/User Preferences

For existing users, enter your user name and password. If logging on as a new user press the new user option and enter the six character update code that was received from the specification update or counter license.



Figure 109

From the User Information tab, enter any contact information on the left pane.

The Extra Settings pane provides additional customizing options.

- Default Machine Type – Used to setup what the machine is, Quick Check or Aligner.
- Quick Check report type - Used to setup which Quick Check printout will be displayed on HunterNet.
- Quick Check Header – Used to enter custom text at the top of the new Quick Check printouts.
- Do you email customers results? – If set to no then the Quick Check auto advances after upload. If set to yes then the Quick Check shows an email screen after upload.
- Upload Custom Logo – Used to setup the logo on the HunterNet printouts

### Linked Accounts

This section is used to allow a shop manager to see the results from multiple machines under the current user name logged in. Linked Accounts work for all sections of Shop Results as far as listing events and showing

reports. Login and contact info can be viewed using the “Details” button.

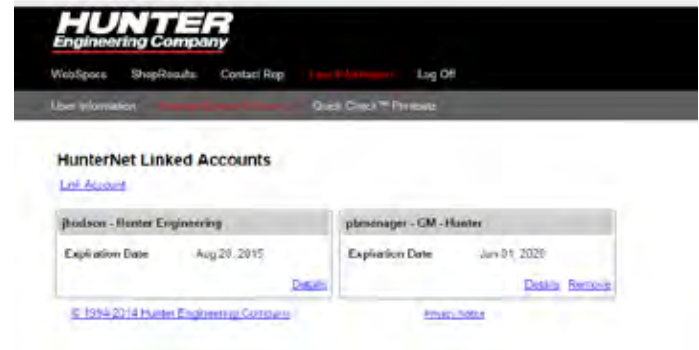


Figure 110

## 2.5 WebSpecs Online Specification Database

WebSpecs is available during the whole alignment process, not just when recalling specifications. Choose a vehicle or enter a VIN to view alignment adjustment options, pictures and diagrams as well as TPMS and CodeLink data for that vehicle. Specifications retrieved from WebSpecs are saved to the hard drive where they can be retrieved later without an Internet connection. These specifications are recalled from the WinAlign Specifications screen just like all the specifications loaded in the specification database.

When accessing WebSpecs in WinAlign a web browser window will open framed by the WinAlign screen.

The WebSpecs feature lets the user obtain specs directly from the constantly updated database at Hunter Engineering Company.

This combination produces a rapidly updated database to help the shop stay up-to-date providing access to the most current specifications and illustrations.

WebSpecs can be accessed from any PC with an Internet connection and Internet Explorer 5.5 and above. Use [www.hunternetwork.com](http://www.hunternetwork.com) to logon to WebSpecs. The website will function the same as it does from the aligner console. When viewing online from a standard PC the screen will be similar, but without the WinAlign frame and functionality.

The Hunter Engineering website is accessible by selecting the "Hunter.com" softkey in the second level of softkeys on every "WebSpecs" screen further increasing the information available to the shop.

### **WebSpecs® Hardware and Software Requirements**

The WebSpecs database is included with a HunterNet subscription, which requires a standard PC, or Hunter Aligner loaded with WinAlign® 7.x and above software, internet connection, and an email account.

Internet Explorer 5.5 Service Pack 2 or above is required.

To use request a specification or contact a rep in WebSpecs, the aligner console must have an email account set up.

### **WebSpecs® User Authorization**

The user will be required to obtain a one-year HunterNet® Access License. The License provides a user identification and password. This user name will only operate on one aligner and one additional device with

internet access. At the end of the license expiration date, the WebSpecs feature will no longer be available, and the password will expire. Contact your local Hunter service representative for upgrade and subscription rates.

Questions about subscriptions or service questions can be sent directly to service or sales personnel. Select the "Contact Rep" button on the top of the HunterNet home page to list the sales and service reps in your area. There will be full contact information and email links to send a message directly from WebSpecs.

### **Accessing WebSpecs.NET® on the Aligner Console**

Start WinAlign® and select "Begin Alignment". In the "Recall Specifications" screen, determine whether the vehicle is already in the specification database. If the vehicle is not listed, select the "WebSpecs" softkey.

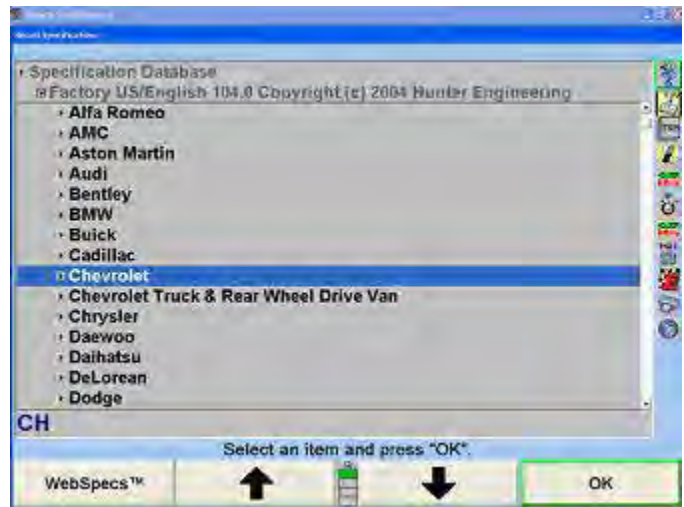


Figure 111

A screen will open, requesting a user name and password. Enter the user name and password provided with your HunterNet subscription. After entering the user name and password, the WebSpecs screen will open. The password can be saved and will no longer be requested.

Upon initial login, some extra information is required to set up the account. From the User Information tab, enter any contact information on the left pane.

The Extra Settings pane provides additional customizing options refer to "Initial Setup/User Preferences" on page 61 for more information.



When downloading from a remote PC, the file will be saved to the directory selected, such as a USB flash drive.



Figure 118

The default save location is the Windows “Downloads” folder. Click “Change Download Directory” to choose where you want the spec file saved, then click “Change Directory”.



Figure 119

Click “Start Download” to save the file to the selected directory. If successful, the word “Complete” will appear under the USB drive icon

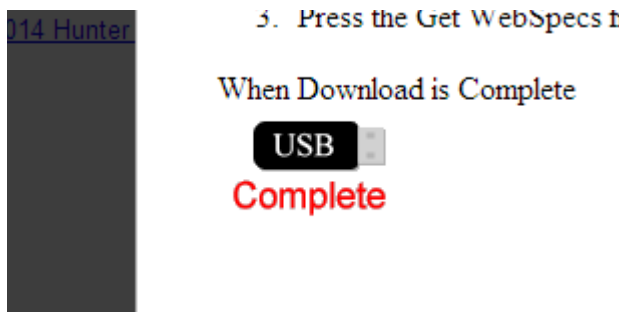


Figure 120

### Uploading Specifications From a File

To upload spec files to the aligner PC, plug the flash drive into an open USB port. At the “Recall Vehicle Specs”

screen, move to the third level of softkeys and select “Get WebSpecs from Disk File”.



Figure 121

If the files do not appear in this window, move down to the lowest level of softkeys and select “Set WebSpecs Search Location”. Enter the drive or directory name of saved files, such as “D:\”.



Figure 122

The files should now appear after selecting “Get Webspecs from Disk File”. Double clicking the vehicle selects it and WinAlign will proceed with the alignment or QuickCheck process.

### Recalling Saved WebSpecs®

Each time a vehicle is selected in WebSpecs®, the specifications are stored on the hard drive and can be recalled without using the Internet connection. To recall WebSpecs, select “Show Spec Databases” from the softkeys on the “Recall Specifications” screen. Select “Saved WebSpecs” from the screen display to view all saved WebSpecs listed alphabetically by manufacturer. Select the vehicle from the screen, and begin alignment.

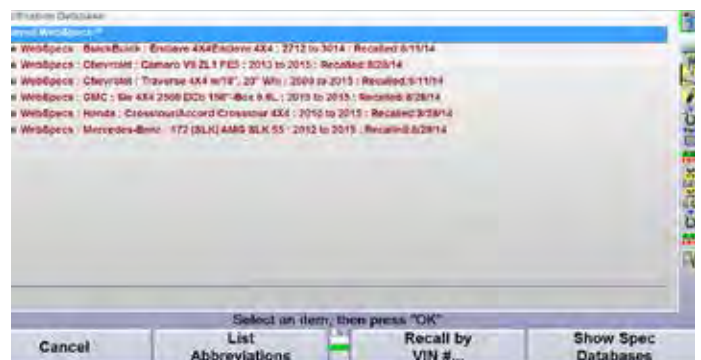


Figure 123



## Deleting Saved WebSpecs®

WebSpecs® is limited to 50 maximum downloads. When the maximum has been reached WebSpecs will no longer save the downloaded WebSpecs. In order to save new WebSpecs it will be necessary to delete older downloaded specifications.

When you have exceeded the 50 maximum downloads the following message will automatically appear.

The maximum number of WebSpecs has been stored on your computer. The WebSpec you just recalled will be available during the current alignment but will not be available for later recall from your hard drive. To make more space available for WebSpecs, press “Delete the ten oldest WebSpecs”.

To remove the oldest WebSpecs select the “Delete the ten oldest WebSpecs” softkey. Selecting “OK” will load the WebSpecs into the alignment procedure, but will not store the WebSpecs for recall.

WebSpecs can also be deleted one at a time. From the “Recall Specifications” screen select “Specification Database” to show all specification databases. Select the “Saved WebSpecs” database to show all saved WebSpecs. Highlight the specification to be deleted (only one can be highlighted at a time).

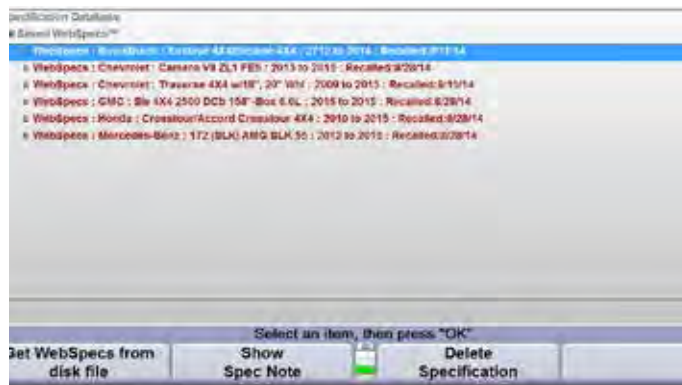


Figure 124

Select “Delete Specification” from the softkeys to remove.

## Viewing Adjustment Illustrations in WebSpecs®

Photos and diagrams of adjustment options are available in WebSpecs vehicle summary screen.

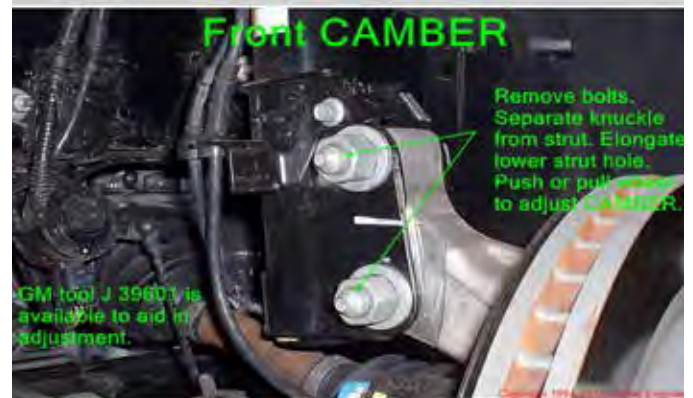


Figure 125

Clicking on the thumbnail picture of an adjustment will open up an enlarged view with options in the lower right corner for viewing videos and or animations, if available.

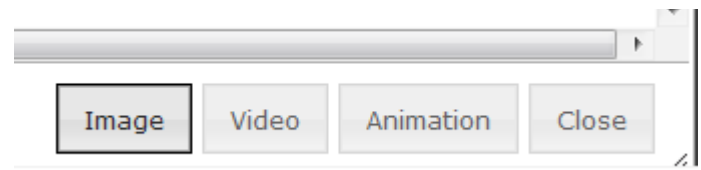


Figure 126

To view diagrams instead of pictures, click “Adjustment Illustrations” in the Tool Box, then select “Diagrams Only”. Available diagrams are listed at the bottom of the screen

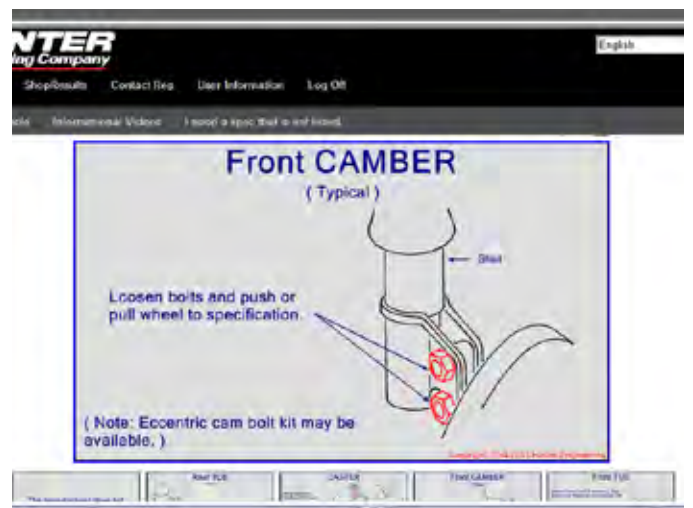


Figure 127 - Diagram form



## Using WebSpecs® on a Remote PC

Access the Internet from any PC with an ISP and Internet Explorer 5.5 Service Pack 2 or greater. Navigate to [www.hunternetwork.com](http://www.hunternetwork.com).

Enter the user name and password and select “Logon”

All functions of the website are identical to the functions when used within the WinAlign software program except that specs cannot be viewed.

## Requesting a Specification

When selecting “I Need a Spec That is Not Listed” the “Request Specification” screen will appear. The form will request contact information and information about the vehicle in question. A note box below can be filled with notes about the vehicle, or special requests. Once the form is complete select the “Send Request” button. The request is automatically sent to Hunter Engineering using your email account and a note will appear stating that the message has been sent.

Figure 133

## TPMSpecs™ on WebSpecs®

Just as updated vehicle adjustment specifications are available on WebSpecs, so are TPMS specifications.

Select the year make and model of the vehicle as normal using WebSpecs. Select the TPMS icon at the top right of the vehicle summary screen.




Figure 134

Detailed TPMS information about the selected vehicle will be shown.



Figure 135

## TPMSpecs within WinAlign

When TPMS information is available for the vehicle being aligned this icon, , appears to the right of the vehicle description at the top of the screen.


**Buick : Century : 2001-03** 

Figure 136

Click the TPMS icon and the following screen will appear.



Figure 137

Select the specific vehicle being aligned and detailed instructions will appear.



Figure 138

## 2.6 ShopResults

The shop results tab at the top of the page is a central location for all reports. Each alignment and QuickCheck report can be found quickly and easily by scanning or entering the VIN number.



Figure 139

The list can be sorted by shop location, date range, inspection type, pass/fail results, customer name, email address and vehicle license number.

From the “Results” column, users can view QuickCheck and alignment results and email those results to the customer or any valid email address.

Total: 5 [Show/Hide Columns](#)

VIN	Results
<a href="#">wvtAssistedSteering</a>	<a href="#">Results</a> <a href="#">Bar Graphs</a> <a href="#">Email</a> <a href="#">Delete</a>
<a href="#">SAJWJ2GD4E8VZ3R5Z</a>	<a href="#">Results</a> <a href="#">Bar Graphs</a> <a href="#">Email</a>
<a href="#">1G1ZC5E01CF105791</a>	<a href="#">Results</a> <a href="#">Bar Graphs</a> <a href="#">Email</a>
<a href="#">1G1ZC5E01CF105791</a>	<a href="#">Results</a> <a href="#">Bar Graphs</a> <a href="#">Email</a>

Figure 140

Alignment records include a “Results” link that displays vehicle information, alignment angle specifications and before and after measurements.



Figure 141

Clicking the “Bar Graphs” link opens a results window of the familiar bar graph reading layout. For alignments, there is an option to view the before and after results. Bar graphs of QuickCheck results include a virtual view of the suspension as well (Figure 146)

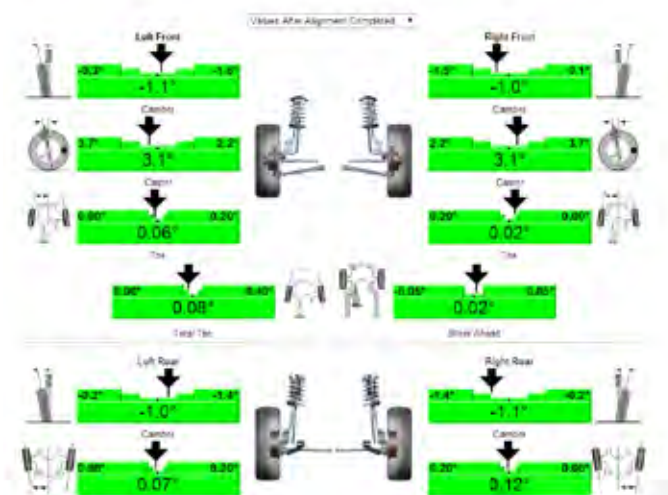


Figure 142

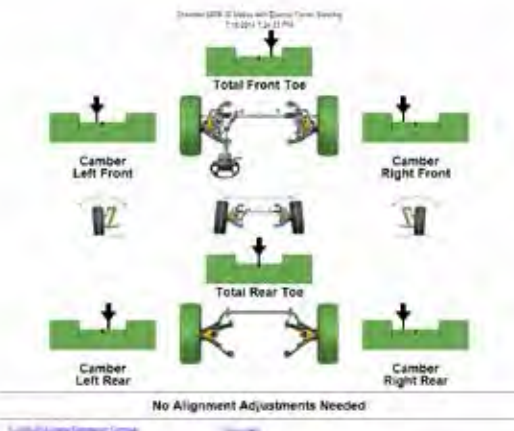


Figure 143

## Emailing Results

Clicking the “Email” link opens an email form that includes a link to the results. Fill in the fields as necessary and click “Send Email” to send the message.

Figure 144

The recipients email will include a link to the results. Alignment results will be formatted the same way they are viewed on the “Bar Graphs” screen “Figure 145” on page 69. QuickCheck results will be formatted based on printout selected under the HunterNet “User Info” tab.

## Alignment/QuickCheck Trends and Reports

HunterNet compiles and stores results for alignment and QuickCheck trends, as well as detail reports and management reports for QuickChecks performed. Links are at the top of the home page.



Figure 145

## Alignment Trends

The alignment trends tab creates visual metrics to illustrate alignment performance. Metrics such as alignments per month, model year, and mileage can all

be tracked. The time frame and reports displayed can be changed using the tools at the top of the page.

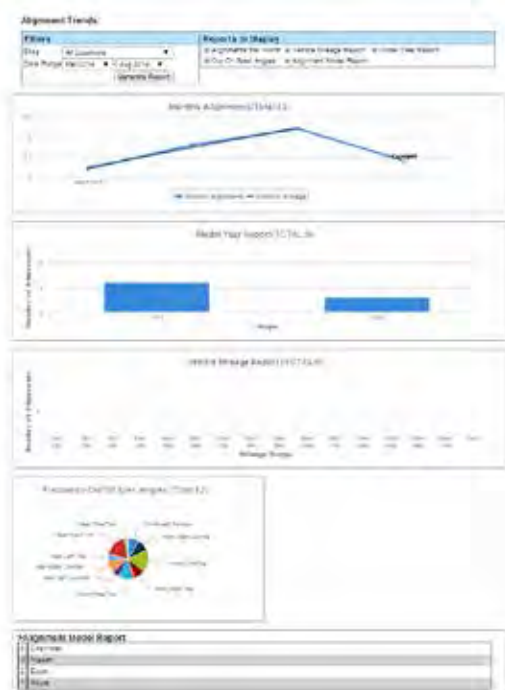


Figure 146

### QuickCheck Trends

Various reports can be displayed such as Quick Checks Per Month, Vehicle Mileage Report, Model Year Report, Out of Spec Angles, and Quick Check Model Report. These all can be toggled to be shown or hidden. This page displays a similar graphical format as Alignment Trends.

### Management Report

Service opportunities generated by the Quick Check machine are displayed in the Quick Check Management Report.



Figure 147

### QuickCheck Details

Quick Check Details displays the total number of tests performed and percentages of opportunities. This information can be used to determine repair opportunities.



Figure 148

### Hunter Web Site



Figure 149

Selecting the Hunter Engineering Company logo on any page will display the Hunter website home page within the frame of WinAlign®. Clicking the blue Internet Explorer icon near the Start button will open the Hunter.com website in a different window. The site offers additional information for equipment owners and users, as well as sales and service personnel.

### Selecting Display Units

Do not underestimate the importance of selecting the display units. Although the ability to change display units can be beneficial, the factory specifications are displayed in the format designated by the manufacturer.

Press "Set Display Units" in the "Vehicle Specifications" primary screen. The "Alignment Measurement Units and Formats Setup" pop-up screen will appear listing "Current" and "New" settings.



The “Alignment Measurement Units and Formats Setup” pop-up screen may also be accessed by selecting Alignment Measurement Units and Formats from Aligner Setup. Refer to “Aligner Set-Up.”

Select and change the units and formats for the various alignment displays from the following pop-up screen. Both the “Current” and “New” settings are shown as example measurements.

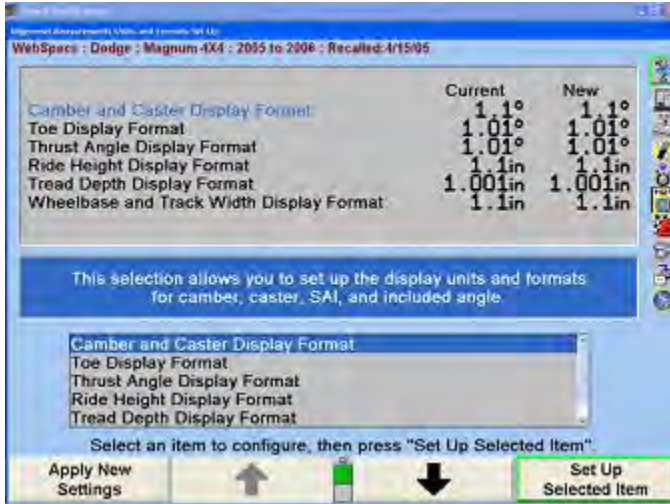


Figure 150

Press or to highlight a display format type. When a parameter type is highlighted, a brief explanation of the measurement type appears.

Press “Set Up Selected Item”. The “Units and Format Selection” pop-up screen appears to allow the units and formats to be selected. This pop-up screen continues to show the current and new settings for all the display formats.

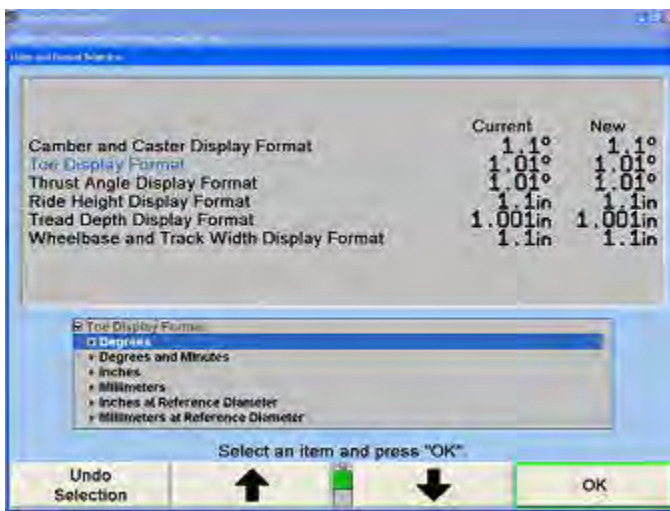


Figure 151

Press or to highlight the desired units, then press “OK”. The screen changes to show the formats available for the selected units for the display format.

Press or to highlight the desired units, then press “OK”. If the selected format is fractional, a third selection must be made, to select whether the fractions should be reduced. When the final choice is made, the pop-up screen closes and the display returns to the “Alignment Measurement Units and Formats Setup” pop-up screen. The new example for the display format shows the selection just made.

Press or to highlight another display format and continue to set up the units and formats.

If the change(s) should be applied only to the current vehicle, press “Apply New Settings”.

If the change(s) should be applied to the entire factory database each time the system is powered up, press “Set As Default”.

Press “Exit” to return to the “Vehicle Specifications” screen.

## Printing Specifications

The vehicle specifications can be printed from the Vehicle Specifications primary screen and the Vehicle Measurements and Adjustments primary screen.

To print the vehicle specifications, press “Print” on the Vehicle Specifications primary screen or the “Vehicle Measurements and Adjustments” primary screen. The “Print” pop-up screen will appear.



Figure 152

If you wish, type in a note to appear on the printout. Press “Print Specifications” to print the vehicle specifications.

## 2.7 Alignment Log Analyzer

The alignment log analyzer will store basic information about each alignment that can be used to generate an alignment summary.



At least one alignment must be performed for the log analyzer to become available.

The log analyzer can be reached from the third level of the logo screen.

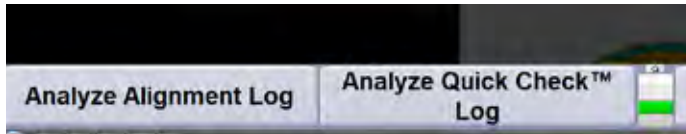


Figure 153

When selected, a separate program will launch the analyzer.

- The left most folder button contains the alignment log file.
- The checkmark icon contains the QuickCheck log file.
- The “From” and “To” buttons specify the start and end dates to view.
- The “Update” button will regenerate the report using the specified start and end dates.
- The last icon will export the data into a CSV file which can be used for further analysis.



Figure 154

The small buttons below the large buttons have the following uses:

- Prints the current report
- Copies the selected text
- Zoom In
- Zoom Out
- Show single page at 100%

- Show single page to fill the window
- Show an entire single page in the window
- Show two entire pages in the window



Figure 155

Each report is organized in the following way:

- The header of the report shows the dates of procedures included in the report.
- The first page starts with the total number of procedures, independent of the time period
- The number of procedures for the time period is shown next.
- For each data, some summary information is presented, including the date and the number of procedures performed that day. For QuickCheck procedures, this also includes the number of passing procedures and % passing.
- For alignment procedures, this includes the time, the VIN (if it was entered) and the spec used in the procedures
- For QuickCheck procedures, this includes if the vehicle passed/failed the test in addition to the data for Alignment procedures.

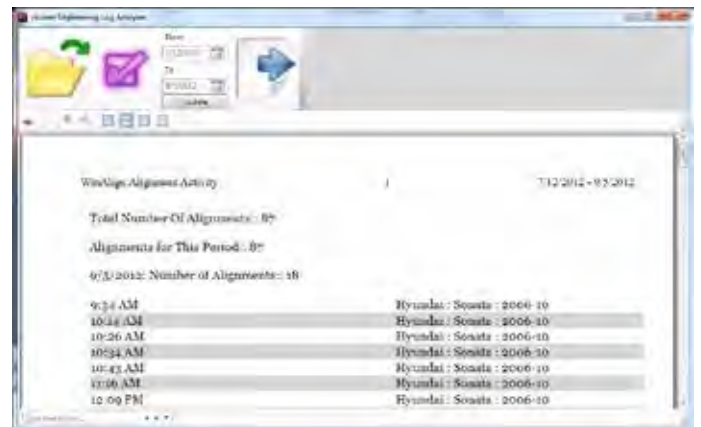


Figure 156



## 2.8 Vehicle Measurements and Adjustments

### Vehicle Plan View Status Indicator

The purpose of the vehicle plan view status indicator is to illustrate:

The geometry of the vehicle under alignment.



This feature is more useful for truck applications because automobiles all show similar alignment geometry.

Where and how the sensors should be mounted.

Which axle of the vehicle is currently displayed.

The current status of the sensors, transducers, and sensor communications.

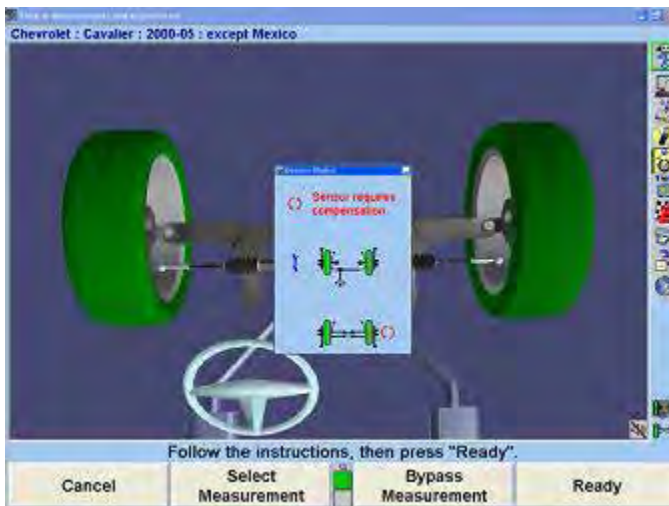


Figure 157

The indicator appears on the display when:

The primary or pop-up screen actively uses the sensors to measure or adjust the alignment.

An alignment procedure is being selected, where one or more instances of the plan view are used to illustrate the steps of the procedure.

During VirtualView® and ExpressAlign® screens.

The indicator shows:

The vehicle geometry.

The currently required sensor mounting locations and orientations.

Which axle the measurements and adjustments currently apply.

Which axle is currently selected (which applies to jacking up the axle, etc.).

The individual wheels turn red when a sensor problem is present.

To change the displayed axle measurements, click on a wheel of the indicator with a pointing device, or press the softkey for "Show Next Axle".

### Target Blockage

The Plan View Sensor Status Indicator displays a live image of target status. If a target image is blocked the Plan View will display the following image indicating which target image is blocked.



Figure 158


Select "View Targets" to display a live video camera image of all four targets. The thumbtack image  in the upper left hand corner of the pop-up keeps the window visible.



Figure 159

Each target can be selected to zoom the image to identify viewing errors. Simple errors could be caused by a physical interference, or a dirty target, or possibly a target rotated out of viewing range.





















## Sensor Troubleshooting

If a sensor has a problem, the “Sensor Status” pop-up screen will display, and an icon appears next to the affected sensor to indicate the problem. If the sensor has multiple problems, the icon representing the highest priority problem appears. Two icons may appear at times, thereby showing two separate problems.



The highest priority problem with the set of sensors is shown above the plan view, as both an icon and as text. The icon is duplicated next to the sensor or sensors that experience the problem.

Note that different sensors may experience different problems at the same time. For example, the left front sensor might require compensation while the right front sensor has a problem with a camber transducer. An icon meaning “the sensor requires compensation for runout” would appear next to the left front sensor, while an icon meaning “the sensor has a transducer problem” would appear next to the right front sensor. The compensation problem has a higher priority than a transducer problem, and so the icon and text above the plan view would show the same icon as the left front sensor along with the text “Sensor requires compensation”.

The icons that may be found next to the sensors in the sensor status pop-up screen, and the text that would appear with the icon above the plan view, are as follows:

	Sensor is not connected.
	Sensor has communication problem.
	Sensor is an unknown type.
	Sensor has self-test error.
	Sensor is mismatched with others.
	Sensor is not calibrated. (Cal-Check®)
	Sensor has calibration errors.
	Sensor requires compensation.
	Caster adjust transducer has problems.
	Camber transducer has problems.
	Transverse toe transducer has problems.
	Longitudinal toe transducer has problems.
	Sensor has excessive runout.
	Turn encoder has miscounted.
	Ride height encoder has miscounted.
	Sensor is not level. (Level Reminder®)
	Toe transducers may require re-calibration.
	Battery requires recharging.
	(red) Target not found. Targets need to be cleaned.
	(black) Target is found by camera, but not measured. Targets need to be cleaned.

The following icons can appear overlaying the line of sight from one sensor to another:

-  Transverse toe beam is blocked.
-  Longitudinal toe beam is blocked.

### Spoiler Mode (Only applies to DSP508 and DSP508-XF Sensors)

If a spoiler, air dam, or ground effects below the front of the vehicle block the transverse toe beam, WinAlign® can continue with the alignment using spoiler mode.

The “Start Spoiler Mode” message appears when the front or rear transverse toe beam is blocked.



Figure 160


Select the “Start Spoiler Mode” button on the screen to continue with the alignment procedure.


Once “Spoiler Mode” is activated, the “Plan View” grays-out the blocked toe transducers and removes the toe line between the sensors.

### Showing Measurements

For “Geometric Centerline” the measurements for alignment, front camber, toe, and total toe will be shown.

For “Thrust Line” or “Total 4-Wheel” alignment, camber, toe, and total toe for the front will be displayed as well as rear camber, toe, total toe, and thrust angle.


 These measurements should not be used to diagnose or adjust the vehicle until the vehicle is lowered, jounced, and the wheels are in a straight ahead position.

 A red “X” next to the sensor having difficulty indicates a blocked optical path or other communication problem.

The “Cross Camber” and “Cross Caster” values represent the difference between the left and right measurements on the same axle.

The alignment measurements are displayed using the default unit of measure (degrees, inches, etc.) unless you have changed them.

Alignment measurements for CAMBER, CASTER, SAI, SET BACK, and THRUST ANGLE are generally displayed in degrees. TOE is generally displayed in either degrees or inches.



A negative sign (-) is used to indicate the following:  
 A negative value for a specified angle or tolerance. A SET BACK condition to the left (indicating the left front wheel is trailing the right front wheel). A THRUST ANGLE condition to the left (indicating a thrust line toward the left of centerline). Positive values for SET BACK and THRUST ANGLE indicate conditions to the right.

Pre-alignment measurements can be saved to be printed on the summary after the alignment is complete. This feature supplies the ability to compare the measurements before and after the alignment. Pressing “Save Before Measurements” will store these measurements.

### Bar Graph Adjustments





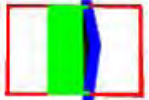

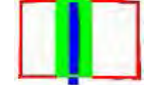

Bar graphs are used to show alignment angle information for each wheel. These bar graphs indicate the difference between the actual measurements of the vehicle and the recalled specifications. The adjustment tolerances determine the size of the center areas of the bar graph.

Softkeys labeled “Show Next Axle”, “Show Bar Graphs”, and “Show Next Bar Graphs” are available to access adjustment displays. The system utilizes both bar graph and digital adjustment displays.

The numerical values below the bar graphs represent the actual measurement. The ideal or preferred adjustment would find the wheel position indicator arrow centered over the white line of the center bar and the numeric value reading the preferred specification for the vehicle.

A red bar graph indicates the measurement is out of tolerance. On standard bar graphs, an “X” indicates the measurement direction on the bar graph is beyond the range of the bar graph. The “X” will change to an arrow when the measurement is adjusted into range of the bar graph.

As the vehicle is adjusted, the wheel position indicator moves in the direction of the adjustment. As the adjustment approaches the acceptable tolerance range, the center area of the bar graph grows. When the adjustment is within tolerance, the bar graph changes to green.

Range	VirtualView 3-D Bar Graphs	Standard Bar Graphs
Out Of Tolerance (beyond range of the graph)		
Out Of Tolerance		
Acceptable Adjustment (within tolerance)		
Preferred Adjustment		

If no 3-D bar graph is shown in VirtualView or the standard bar graph color is gray:

Either “no specification”, a “zero tolerance”, or “no tolerance” is entered for that angle.

OR

The sensors are experiencing some problem that prevents measurements, such as: the sensor is unplugged, uncompensated, or the toe beam is blocked.

## Bar Graph Groups

The bar graphs can be viewed in various groups. Three examples are shown below.

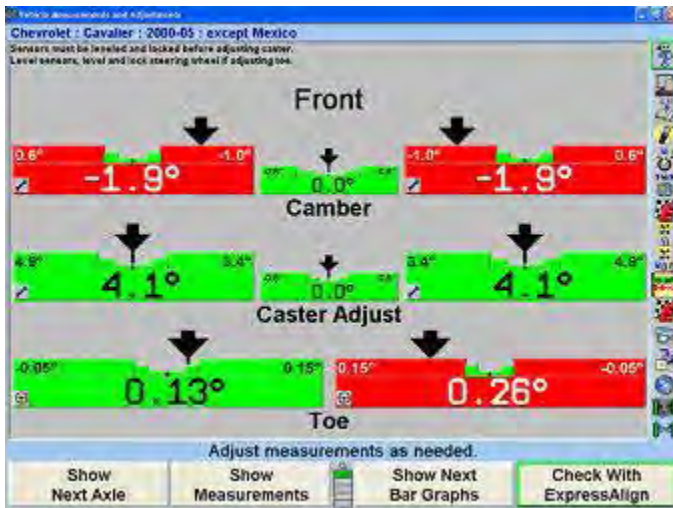


Figure 161



Figure 162



Figure 163

To view an alternative group or single bar graph, press "Show Next Bar Graphs". Repeat to view the next bar graph group. When all enabled bar graphs have been viewed, the first enabled bar group will appear when "Show Next Bar Graphs" is pressed.

To view a single bar graph select the desired bar graph with a light pen or mouse. The system will zoom in on the selected bar graph and all other bar graphs will be removed from the screen.

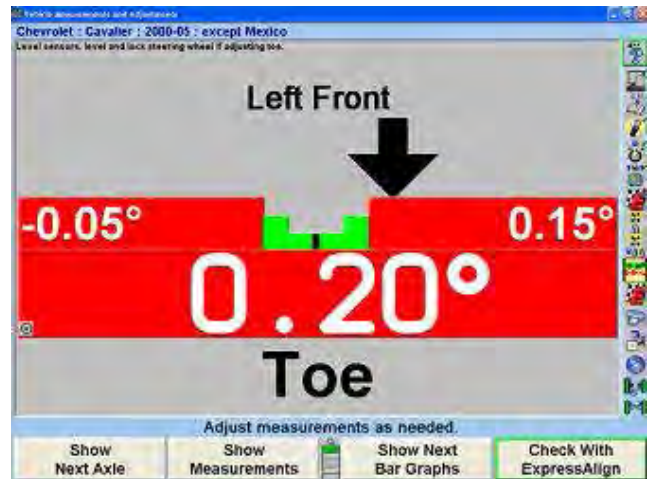


Figure 164

To return to the previous bar graph display, click on the current bar graph.

In VirtualView® select any bar graph with the mouse and it will also zoom in for a larger display.



Figure 165

Like the "Vehicle Measurements and Adjustments" screen, cross camber and caster can now be displayed in the adjustment bar graph screen using the context sensitive menu.

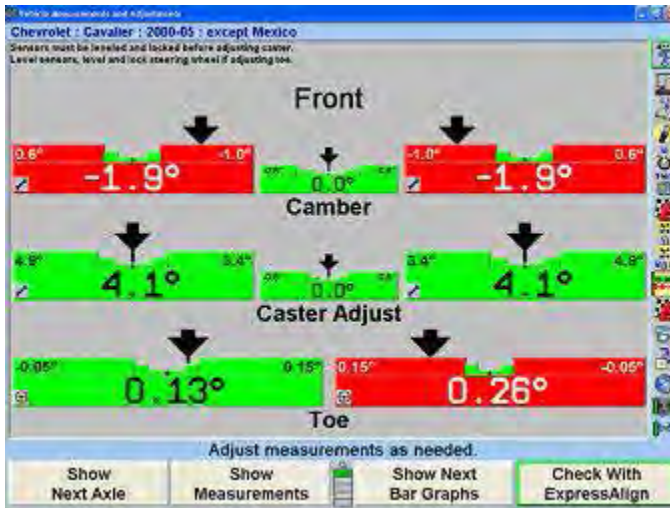


Figure 166

Front Axle Bar Graphs Groups, Rear Axle Bar Graphs Groups, and Cross Bar Graph/Additional Cross Angles may be setup in aligner setup.

### Context Sensitive Menu

A context sensitive menu is available on the bar graph adjustment screen.

To view the menu, move the arrow cursor to the desired bar graph with a light pen or mouse, then press and hold. Pressing the **Tab** key will also cycle through each context sensitive menu.

The items listed in the menu will depend upon which bar graph is selected. The menu may contain some of the following items:

- |   |   |
|---|---|
| Zoom In   | Zoom Out                                  |
| Illustrate Adjustments                            | Video Adjustments                         |
| Animation Adjustments                             | Adjust with Eccentric Cams                |
| Adjust with Shims                                 | Adjust Toe with WinToe®                   |
| Measure Caster                                    | Measure SAI/IA                            |
| Set Units and Formats                             | Select Bar Graph Groups                   |
| Show Vehicle Specifications                       | Adjust With Automatic Bushing Calculator® |
| Show Cross Bar Graphs and Additional Cross Angles |   |



Figure 167

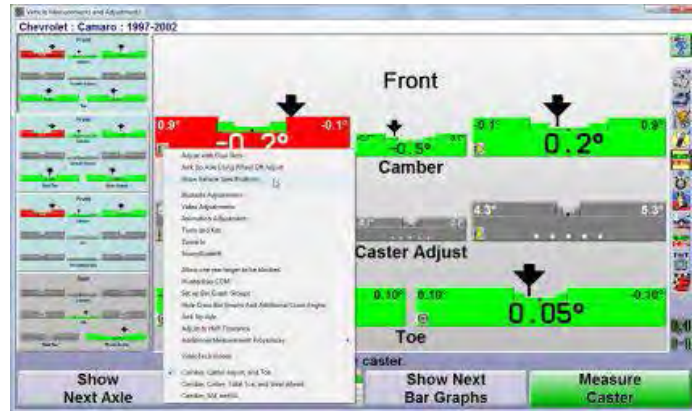


Figure 168

To select the desired item, continue moving the cursor until the desired item is highlighted. Click on the highlighted item and the selected pop-up screen will appear.

Context sensitive menus are also available on power feature adjustment bar graphs.

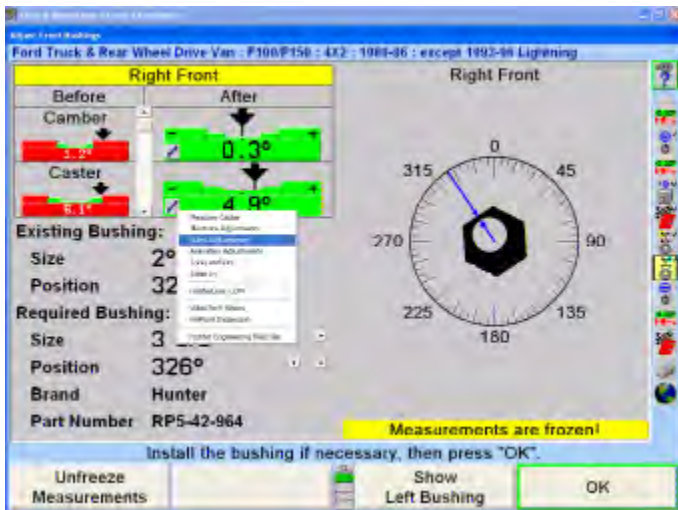


Figure 169 - Automatic Busing Calculator

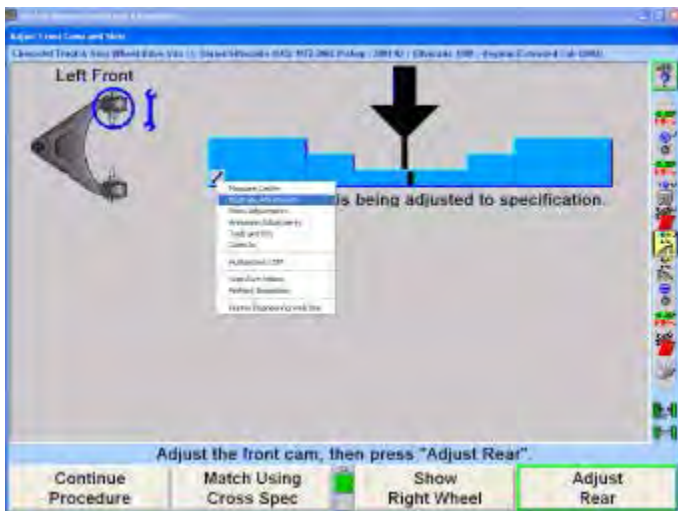


Figure 170 - CAMM, Control Arm Movement Motion

### Zero Adjustments

The “Zero Adjust” screen shows the amount and direction ( $\pm$ ) the actual measurement is from the preferred specification. Adjusting an angle to zero on this display will cause the actual angle measurement to be exactly equal to the preferred specifications as established by the alignment specifications.

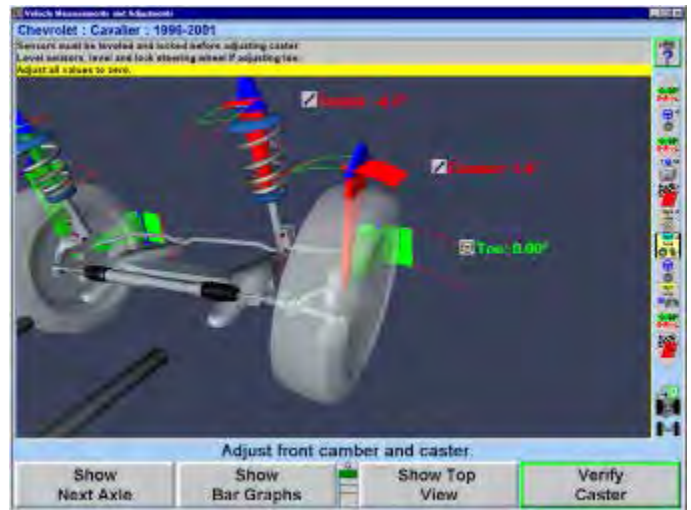


Figure 171

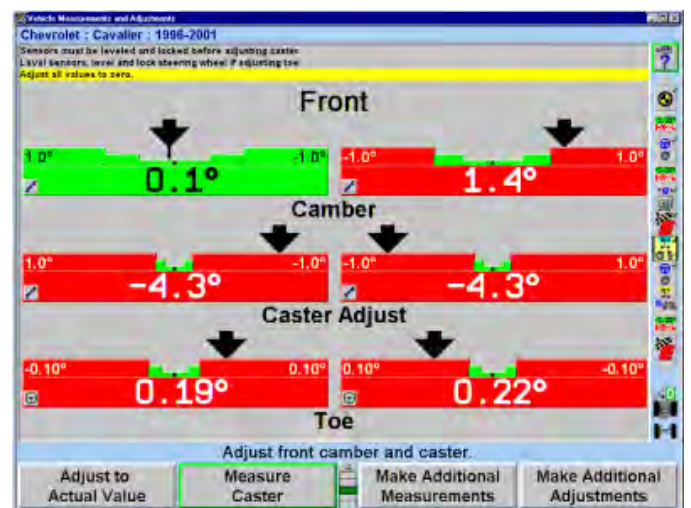


Figure 172

A red bar graph indicates the adjustment is out of tolerance. Green indicates the adjustment is within tolerance. The number 0 indicates the measured angle equals the specification.

### Showing and Selecting Front and Rear Axles

The front and rear axle measurements can be viewed at any time from the “Vehicle Measurements and Adjustments” primary screen.

When the measurements for the rear axle are shown, press “Show Next Axle” to see the front axle measurements.

When the measurements for the front axle are shown, press “Show Next Axle” to see the rear axle measurements.

## Adjusting with Axles Raised

A vehicle may require that the wheels be raised to make an adjustment to rear or front camber and caster. When the wheels are raised, the sensors will move and the angles will change. If the instructions are followed, the software compensates for the movement of the sensors to allow accurate adjustment.



This procedure is not useful for installing shims, wedges, etc. when the adjustment requires the removal of the sensor and wheel assembly.

To adjust vehicle with axle raised:

Press “Jack Up Selected Axle” on the “Vehicle Measurements and Adjustments” primary screen.

If the wheels are not steered straight the following screen will appear. Steer straight ahead and the screen will automatically go to the “Axle Jacking Procedure” screen.

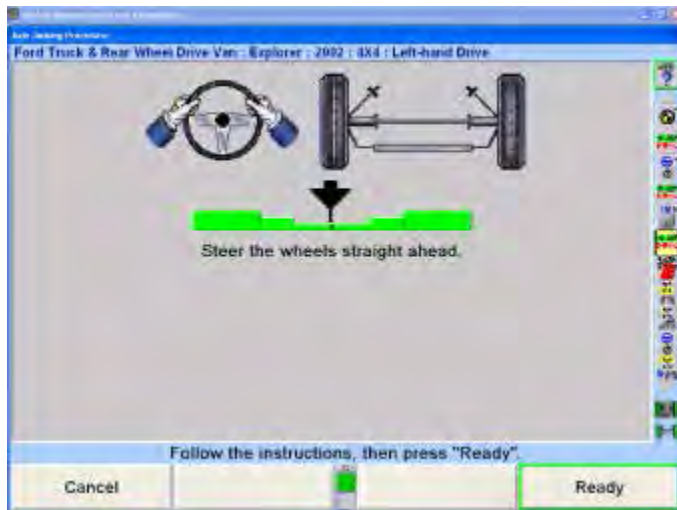


Figure 173

The “Axle Jacking Procedure” pop-up screen will appear.



Figure 174

After the selected axle is raised, press “Ready”. The program will compensate for the difference in sensor readings caused by raising the wheels and return to the “Vehicle Measurements and Adjustments” primary screen.

Make the necessary adjustments while observing the bar graphs. Press “Lower Selected Axle” on the “Vehicle Measurements and Adjustments” primary screen. The “Axle Jacking Procedures” pop-up screen will appear.



Figure 175

Lower the vehicle and then jounce.

Press “Ready”. The screen will return to the “Vehicle Measurements and Adjustments” primary screen.

## Adjusting with Axles Raised Using Jack Detect™ Feature

The Jack Detect™ feature automatically senses when an individual axle is being raised or lowered. This feature requires camera based sensors.

Unlike standard axle jacking procedures, no softkeys need to be selected. An axle can be jacked up during the alignment procedure and WinAlign® will see that an axle is being raised and will proceed directly to the “Axle

Jacking Procedure” screen. Press “Ready” to proceed with vehicle adjustments.



Figure 176

If the vehicle needs to be raised or lowered, the aligner will sense this change. The program detects when the vehicle is lowered to rack height and will again proceed to the “Axle Jacking Procedure” screen. Press “Ready” to return to the alignment procedure.



Figure 177

### **Wheel-Off Adjust Feature**

Using the optional wheel-off adaptor adjustments may be made with wheel and tire assembly obstructions.

The wheel-off adaptor kit, 20-1978-1, can be installed using the vehicles lug nuts or using the additional magnet assembly kit, 20-1979-1.

### **Accessing “Adjust with Wheel-Off” Procedure within WinAlign®**

With camera based sensors, the WinAlign® JackDetect™ feature senses when an individual axle is being raised. Raise the axle and the “Axle Jacking Procedure” screen will appear.

With DSP500 Series Sensors, initiate the axle jacking procedure by pressing “Jack Up Selected Axle” on the “Vehicle Measurements and Adjustments” screen. The “Axle Jacking Procedure” screen will appear.



Figure 178

Follow the on-screen instructions to raise the axle and then press “Adjust With Wheel Off”.



Figure 179

Refer to following page for detailed explanation of the on-screen instructions regarding Wheel-Off Adaptor installation. After completing the on-screen instructions, press “Ready”.



## Wheel-Off Adaptor Installation

Lock the brakes with the brake pedal depressor.



Install a wheel-off adaptor and target (or sensor) to one or both wheels of the raised axle, depending on alignment adjustments required.

With the front or rear axle raised and supported, remove the target (or conventional sensor), wheel adaptor and wheel.

## Standard Bolt-on Wheel-Off Adaptor Installation

Place a Wheel-Off Adaptor, 175-376-1, onto the brake rotor hub or brake drum with a stud through each of the two slotted holes.

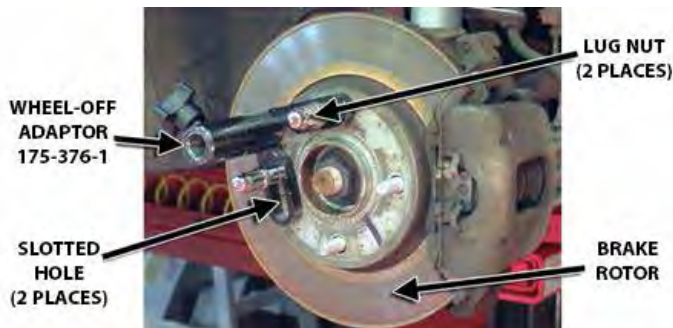


Figure 180

Secure the Wheel-Off Adaptor with two lug nuts.



Do not allow the Wheel-Off Adaptor to slip on the rotor or drum. Once the target (or sensor) is installed, runout compensation and alignment accuracy will be adversely affected if the Wheel-Off Adaptor is allowed to slip.

Test the security of the installation by lightly tugging on the Wheel-Off Adaptor.

## Wheel-Off Adaptor Installation Using the Optional Magnet Assembly Kit, 20-1979-1



Keep magnet assembly away from computers, CRT monitors, magnetic storage media, pacemakers, watches, and other objects that can be damaged by magnetic fields.

Remove the 3/8-16 X .63 socket head cap screw securing the foot to the hub.

Remove the hub and set aside.

Place the magnet assembly, 60-31-1, on the foot, aligning the two smaller holes to the split pins.

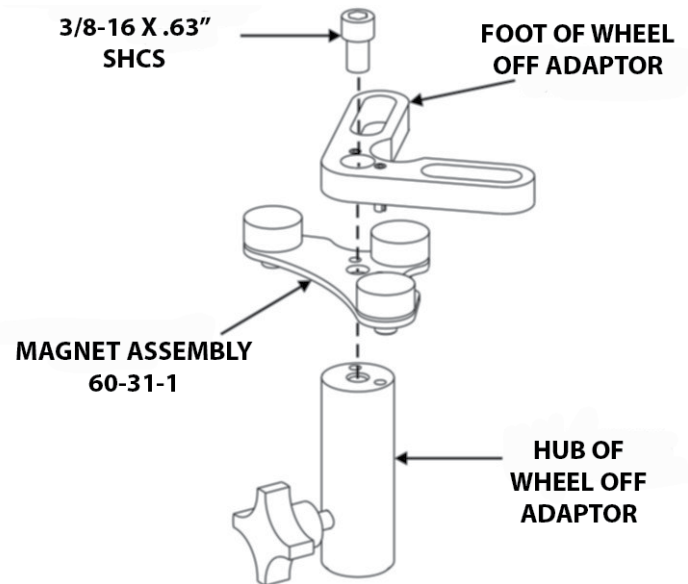


Figure 181

Place the previously removed hub onto the assembled magnet assembly and foot, aligning the two smaller holes to the split pins.

Re-install the 3/8-16 X .63 socket head cap screw, securing the magnet assembly and foot to the hub.

Repeat magnet installation to second Wheel-Off Adaptor.

Lock the brakes with the brake pedal depressor.



Install a wheel-off adaptor and target (or sensor) to one or both wheels of the raised axle, depending on alignment adjustments required.

With the front or rear axle raised and supported, remove the target (or conventional sensor), wheel adaptor and wheel.

Secure the brake rotor to the hub with at least two lug nuts.



The strong magnets snapping to a steel surface may create a possible pinch hazard.

Place the Wheel-Off Adaptor onto the pad surface of the brake rotor.

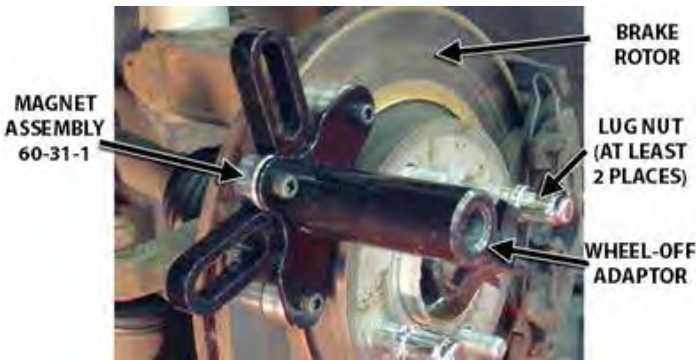


Figure 182



Do not allow the Wheel-Off Adaptor to slip on the rotor or drum. Once the target (or sensor) is installed, runout compensation and alignment accuracy will be adversely affected if the Wheel-Off Adaptor is allowed to slip.

Test the security of the installation by lightly tugging on the Wheel-Off Adaptor.

### Re-Install the Sensor or Target

Re-install the target (or sensor) to the Wheel-Off Adaptor.

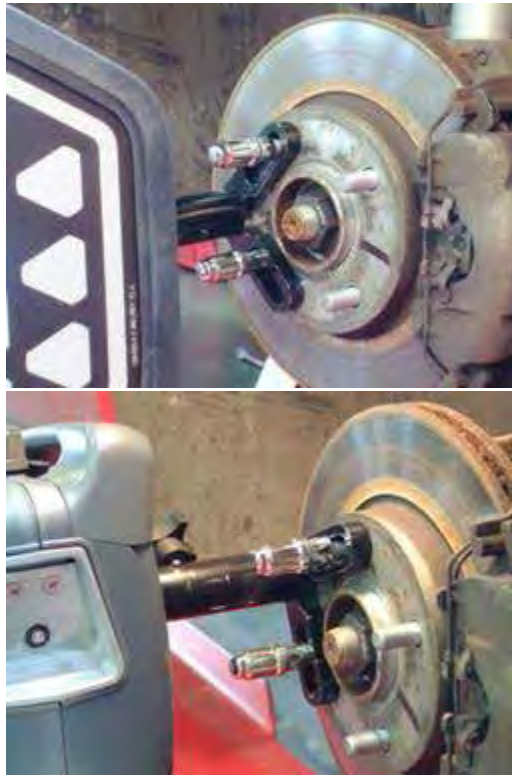


Figure 183

Refer to page 36 for information on installing the SCA adaptors to TD targets for either standard or QuickComp® compensation.

Level and lock the re-installed target (or sensor).

If both sides of the axle require camber and/or caster adjustments, repeat the above instructions on the opposite side of axle.

After the selected axle is raised, press “Ready”. The program will compensate for the difference in sensor readings caused by raising the wheels and return to the Vehicle Measurements and Adjustments screen.

Make the necessary adjustments while observing the bar graphs.



DO NOT adjust toe with the axle raised. Notice the Axle jacked up reminder at the top of the screen.



Figure 184

WinAlign® detects the removal of the target (or sensor) from the raised axle and automatically starts the axle lowering procedure. Remove the target (or sensor) and the Axle Jacking Procedure screen will appear.

OR

Initiate the axle jacking procedure by pressing “Lower Selected Axle” on the Vehicle Measurements and

Adjustments screen. The Axle Jacking Procedure screen will appear.

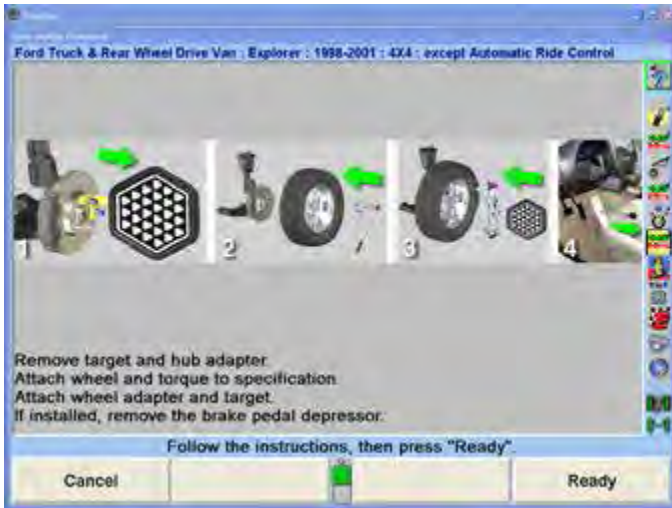


Figure 185

Follow the on-screen instruction to remove the target (or sensor) and Wheel-Off Adaptors and then re-install the wheels, wheel adaptors, and target (or sensor). Press "Ready".

The Compensation Control screen will appear.

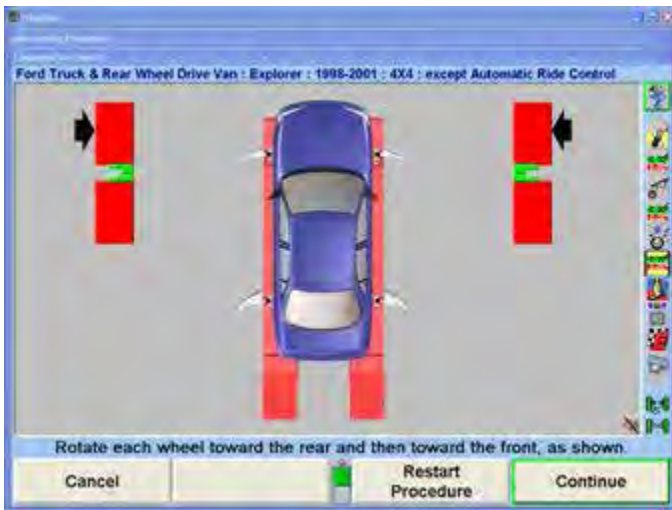


Figure 186

Follow on-screen instruction to compensate the re-installed targets (or sensors) and then press "Continue".



Figure 187

Follow on-screen instruction to lower the axle and then press "Ready".

The screen will return to the Vehicle Measurements and Adjustments screen.

**i** Notice that the axle jacked up note is no longer at the top of the screen.

Make the necessary additional alignment adjustments while observing the bar graphs on the Vehicle Measurements and Adjustments screen.

### ***Saving Before Measurements***

To include the before adjustment measurements on the summary printout or to see what they were, the measurements must be saved.

Perform caster steer as described in "Measuring Caster". When the procedure is complete, the screen will return to the "Vehicle Measurements and Adjustments" primary screen.

Press "Save Before Measurements". The "Save Before Alignment Measurements" pop-up screen will appear.

Steer the wheels straight ahead as indicated by the bar graph on the screen.

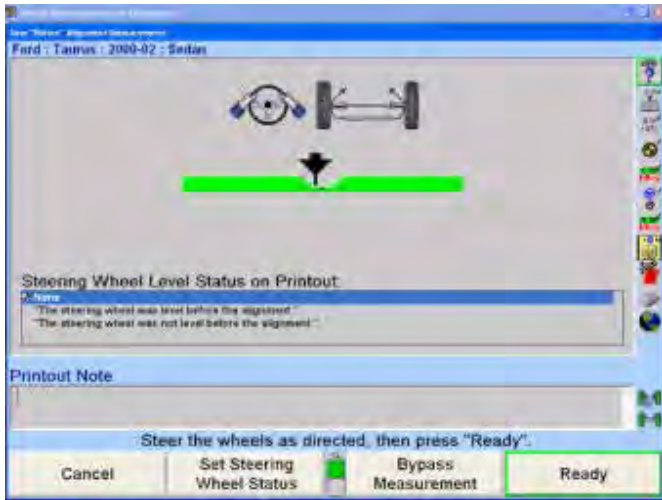


Figure 188

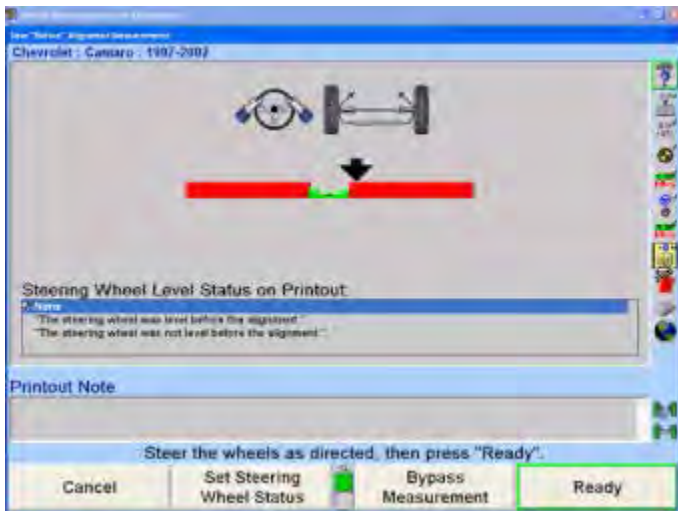


Figure 189

For printouts, highlight the steering wheel level status. This message will be displayed on printouts.

Press "Ready". The program will save the before measurements and the screen will return to the "Vehicle Measurements and Adjustments" primary screen.

To save current measurements as before measurements, refer to "Saving Current Measurements as Before Measurements."

### Control Saved Measurements

Measurements can be viewed in the current adjustment mode, or when they were initially saved.

### Showing Current Measurements

To display the current measurements of the vehicle:

Press "Control Saved Measurements" on the Vehicle Measurements and Adjustments primary screen. The "Control Saved Measurements" pop-up screen will appear.

Press or to highlight "Show Current Measurements".

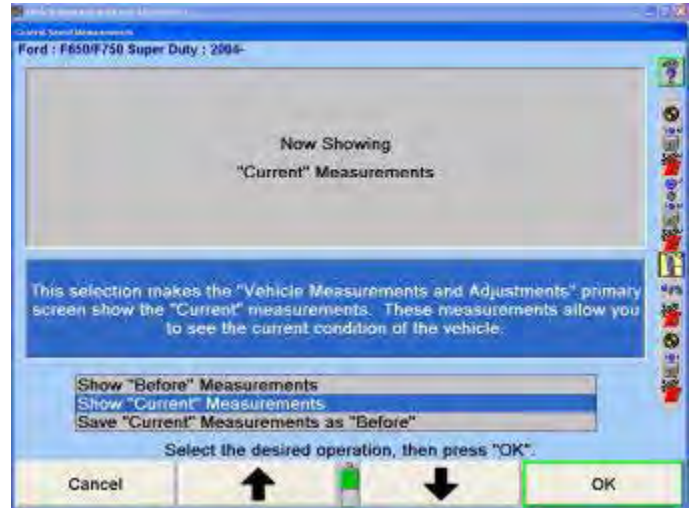
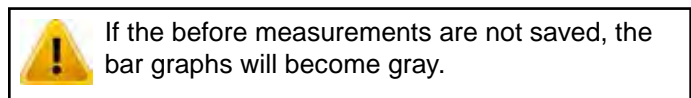


Figure 190

Press "OK". The "Vehicle Measurements and Adjustments" primary screen will appear. The bar graphs will display the current measurements.

### Showing Before Measurements

To see what the before adjustment measurements were:



Press "Control Saved Measurements" on the "Vehicle Measurements and Adjustments" primary screen. The "Control Saved Measurements" pop-up screen will appear.

Press or to highlight "Show Before Measurements".

Press "OK". The "Vehicle Measurements and Adjustments" primary screen will appear.

The bar graphs will revert to the before measurements. The screen will indicate this with a yellow bar across the top. When the before measurements are on the screen adjustments cannot be made.

## ***Saving Current Measurements as Before Measurements***

To replace the before measurements with the current measurements:

Press “Control Saved Measurements” on the “Vehicle Measurements and Adjustments” primary screen. The “Control Saved Measurements” pop-up screen will appear.

Press  or  to highlight “Save Current Measurements as Before”.

Press “OK”. The “Save Before Alignment Measurements” pop-up screen will appear.

Steer the wheels straight ahead as indicated by the bar graph on the screen.

Press “Ready”. The program will save the before measurements and the screen will return to the “Vehicle Measurements and Adjustments” primary screen.

## ***ExpressAlign® Alignment Adjustment System***

ExpressAlign® is a feature that analyzes an alignment job and directs the technician through the alignment and adjustment procedures needed for a specific vehicle. ExpressAlign reduces the alignment procedures to the minimum number of steps required to completely align the vehicle.

ExpressAlign considers the following for each specified vehicle aligned:

The alignment adjustments that are necessary.

The alignment sequence and specifications for the adjustment(s).

The power tools that are applicable, (such as shims, WinToe®, CAMM®).

The applicable adjustment illustrations and videos.

Then ExpressAlign creates a custom alignment procedure that allows the technician to perform only the procedures needed for the selected vehicle.



ExpressAlign may display bar graphs and prompt to adjust an angle that is out of specification that is non-adjustable according to the vehicle manufacturer. ExpressAlign displays these bar graphs to indicate a possible problem within the suspension or steering components that needs to be diagnosed and repaired for proper alignment. This is why the manufacturer publishes a specification for that angle, even if it is not adjustable. There may also be an aftermarket kit available to make the necessary adjustment for this angle.

Three levels of ExpressAlign can be selected from the “ExpressAlign Setup,” or a custom setup can be chosen.

Level I is designed to provide the technician with the maximum amount of help and support to complete the alignment.

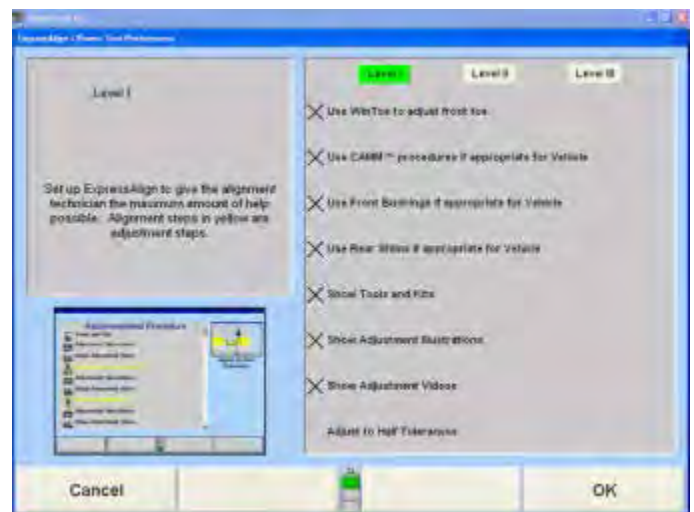


Figure 191

Level II is designed to present the optimal alignment procedure while still showing the user what tools and kits are necessary to complete the job.

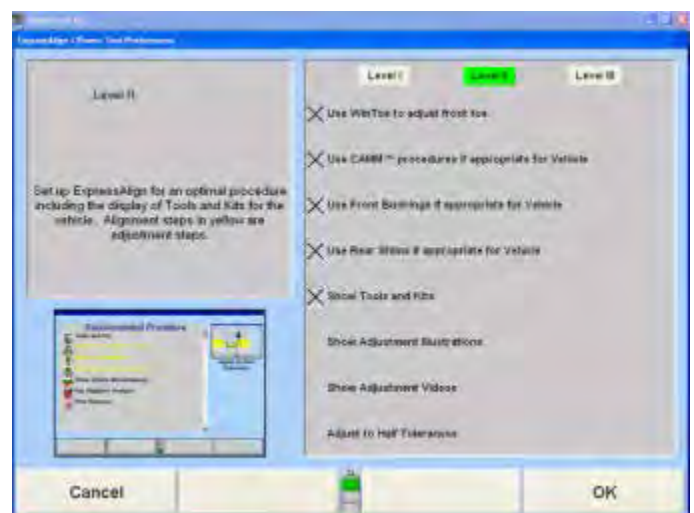


Figure 192

Level III provides the optimal alignment procedure for the experienced technician.

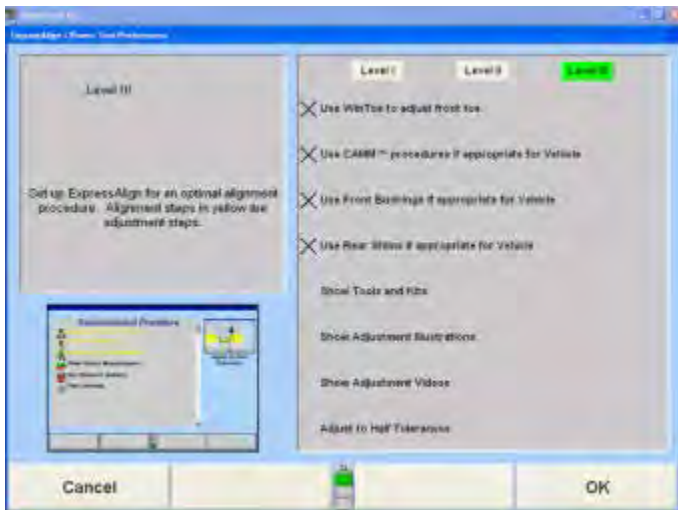


Figure 193

Items may be selected individually for a custom ExpressAlign setup.

The items available include:

- Use WinToe if appropriate for Vehicle
- Use CAMM procedure if appropriate for Vehicle
- Use Front Bushings if appropriate for Vehicle
- Use Rear Shims if appropriate for Vehicle
- Show Tools and Kits
- Show Adjustment Illustrations
- Show Adjustment Videos
- Adjust to Half Tolerances

ExpressAlign can be setup from “Aligner Setup”, or while ExpressAlign is running, it can be setup by selecting “Setup ExpressAlign” softkey.


ExpressAlign cannot be disabled while using ExpressAlign to perform an alignment job. ExpressAlign can only be disabled from “Aligner Setup”.

After the vehicle is selected, inspected, sensors mounted and compensated, caster is measured, but before

measurements are saved, the ExpressAlign pop-up screen will be displayed as shown below.



Figure 194

 The actual procedures displayed will vary depending on the vehicle and procedures that are enabled or disabled in “ExpressAlign Setup.”

On the ExpressAlign screen, press the icon on the procedure bar that corresponds to the step to be completed. During the procedure, continue to press the next icon on the procedure bar in order to progress through the procedure. As you go through the procedure, the current step will be highlighted on the procedure bar.

An icon will be displayed in the ExpressAlign pop-up screen for each suggested procedure.

The procedure created by ExpressAlign will be displayed in the vertical procedure bar on the right side of the screen.

Procedures displayed with yellow text in the ExpressAlign pop-up screen refer to adjustments that must be made for the specified vehicle. Procedures displayed with black text are for measurement verification or to provide assistance during the alignment.

Selecting “Print Analysis” from the softkey panel of the ExpressAlign pop-up screen will print all measured angles with the recommended procedures required to adjust the angles.



Figure 195

Selecting "Use Half Tolerance" from the softkey panel of the ExpressAlign pop-up screen will reduce the specification tolerance to half of the original equipment manufacturers recommended tolerance.

If one side of the vehicle is within specification, ExpressAlign will allow the side that is out of specifications to be adjusted with the One-Sided Adjustments procedure. If you complete the alignment and an angle has not been adjusted to within specifications, ExpressAlign will allow you to select "Cancel", "Cannot Adjust to Specifications" or "Check With ExpressAlign".

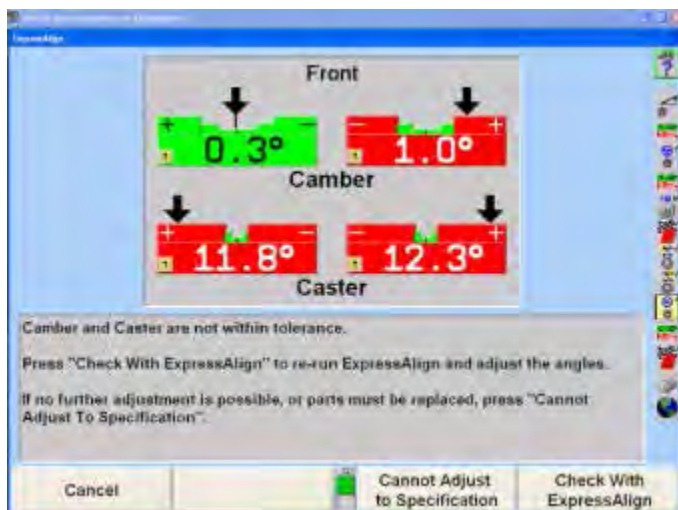


Figure 196

Selecting "Cancel" will return you to the "Vehicle Measurements and Adjustments" primary screen.

Selecting "Cannot Adjust to Specification" will allow you to proceed with the angle not adjusted in ExpressAlign.

Selecting "Check With ExpressAlign" will create a new ExpressAlign procedure and return you to the "ExpressAlign" pop-up screen.

## 2.9 Alignment Procedure

Although the program begins a specific type of alignment, other types of alignment can be selected on the “Control Alignment Procedure” pop-up screen.

The aligner can be set to default to the type of alignment that will usually be performed. Some vehicle manufacturers recommend a particular type of alignment. This information is part of the stored factory vehicle specifications and will change the aligner to the recommended alignment type when the specifications are recalled, regardless of the default selection.

### Adjustment Order

The vehicle should be adjusted in the following order:

Rear Camber (if adjustable)

Rear Toe (if adjustable)

Front Camber/Caster (if adjustable)

Front Toe



If a sensor is removed from the during vehicle adjustment, that sensor must be re-compensated when it is re-mounted.

If a measurement displays in gray with no value shown and an error message is on the vehicle graphic, something is wrong with the sensor at the wheel indicated. The sensor may be disconnected, or an optical line of sight to another sensor may be blocked. When the error is corrected, the error message will disappear and the bar graph will return to normal. Refer to “Sensor Troubleshooting.”

### Selecting the Procedure

Press “Alignment Procedure”, the “Control Alignment Procedure” pop-up screen will appear.



The Control Alignment Procedure pop-up screen may also be accessed by selecting Alignment Procedure from Aligner Setup. Refer to “Aligner Set-Up.”

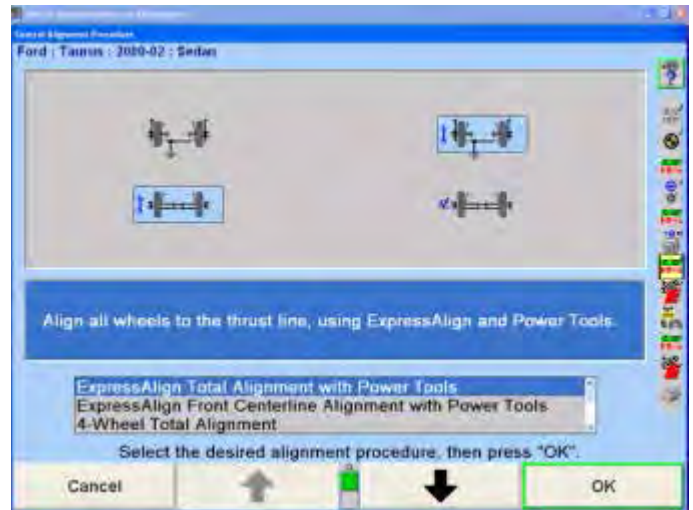




Figure 197

Press  or  until the desired alignment procedure is highlighted. The steps required are illustrated when a procedure is highlighted. Refer to “Alignment Types.”

Press “OK”.



The steps required to perform an alignment procedure may not be exactly the same as the “Getting Started” example. Follow the screen prompts to perform any type of alignment.

### Camera Based Alignment Reference

Camera Based Alignment Reference can be used only with Camera Based sensors and can be set up only after Camera Based sensors have been selected as the default sensor type. To select sensor type, Refer to “Setting Up the Sensor Type,” on page 186 for detailed instructions.

This feature allows the alignment technician to select between using a plane parallel to the runways to determine wheel alignment angles (Runway Reference Plane) or using reference planes defined by the current live positions of the wheels (Live Reference Plane).

Using “Runway Reference Plane” to determine wheel alignment angles is identical to conventional sensors.

Using “Live Reference Plane” to determine wheel alignment angles allows warped or non-flat runways to be used.



The manufacturers' alignment specifications are determined using runway planes (Runway Reference Plane).

To select Runway Reference Plane or Live Reference Plane," Refer to "Setting Up the Alignment Reference," for detailed instructions.

## Measuring Caster, SAI, and Included Angle

The "Measure Caster" display provides guidance through the procedure to measure Caster or Steering Axis Inclination (SAI) and Included Angle (I.A.). At times, measuring SAI, I.A. or turning angle may be useful tools to help determine front suspension or steering system problems with a vehicle.

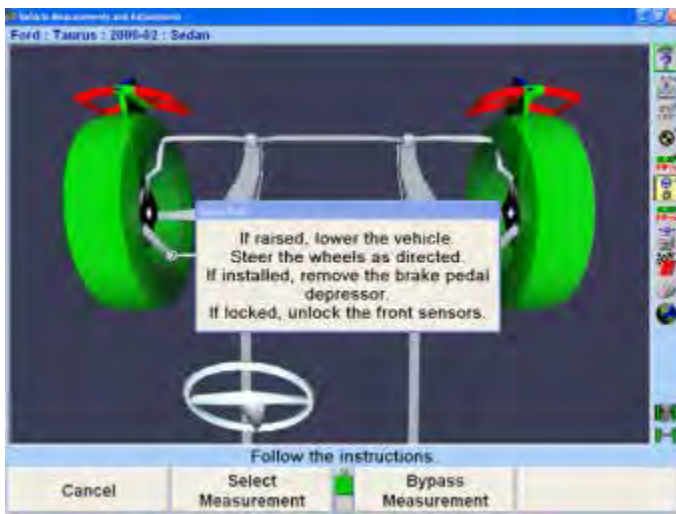



Figure 198

Horizontal bar graphs are used to indicate wheel position or angle position in relation to the preferred position or specification. The center of each bar graph represents the preferred position of the wheel(s) or angle.

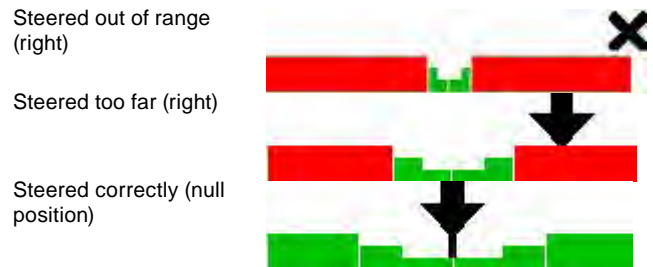
The caster measurement display uses graphics and horizontal bar graphs to guide the steering of the wheels through the caster turn.

A wheel position indicator (either an "X" or an arrow) is positioned within the bar graph and shows the position of the wheel(s). The wheel position indicator will be left of center if the front wheels are steered too far to the left, right of center if the front wheels are too far to the right, or in the center valley of the bar graph if the front wheels are steered correctly (null position).


An "X" on a red bar graph indicates the wheels are steered beyond the range of measurement. Steer the wheels in the direction necessary to move the "X" toward the center of the bar graph. The "X" will change to an arrow when the wheel comes into range of the bar graph.


 Total toe conditions greater than 2 inches or 4 degrees should be corrected prior to steering caster.

As the wheels are steered in the proper direction, the arrow will move toward the center. As the wheel approaches the acceptable tolerance, the center area will get larger. When the wheel is within tolerance, the bar graph will change to green.



When the wheel is in the proper position, the arrow will be over the thinnest section of the bar graph. The aligner will save the measurements and the bar graph will disappear.

 It is not necessary to perfectly center the arrow in the bar graph when steering to measure caster, caster and SAI/I.A., or SAI/I.A. The wheel position is acceptable when the arrow is positioned within the center valley of the bar graph.

 If WinAlign® determines that the brakes are applied or sensors are unlocked while measuring SAI, a prompt will appear asking you to check the sensors and/or brakes.

### Match Caster Adjust to Measured Caster

Unlike conventional sensors, Camera Based Targets should not be unlocked and re-leveled if the target has rotated so that it is not level after measuring caster.

If the Camera Based Sensor targets have rotated so that they are not level after measuring caster but before adjusting caster, "Match Caster Adjust to Measured Caster" should be selected from the caster flyout menu

This will allow WinAlign to electronically compensate for rotation.

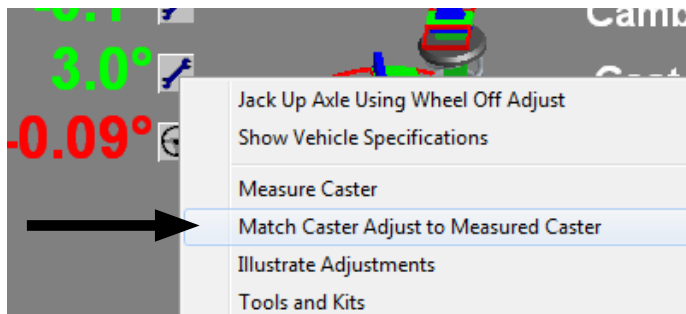


Figure 199

## Measuring Caster

### FasterCaster® Only

WinAlign 14.3 and above features an additional caster measurement option “FasterCaster Only” measures caster only without the use of a brake pedal depressor.

“FasterCaster Only” can be enabled as the default measurement through aligner setup, or chosen from the caster steer screen by selecting “Select Measurement”.

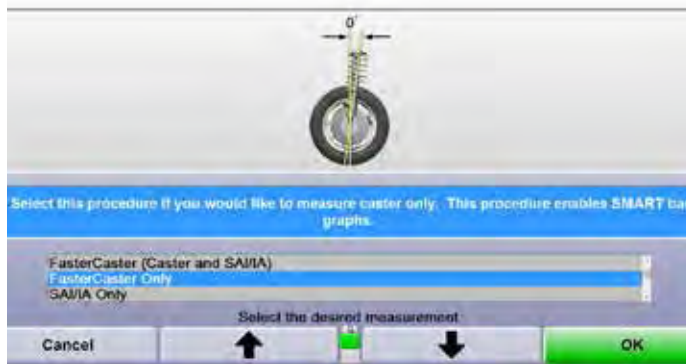


Figure 200



“FasterCaster Only” is only available when using the Hawkeye Elite configuration (Hx421 sensor type and TD/WATD target type).

FasterCaster can also be chosen from the Caster Steer screen with the “Select Measurement” softkey.

Steer the vehicle as directed.

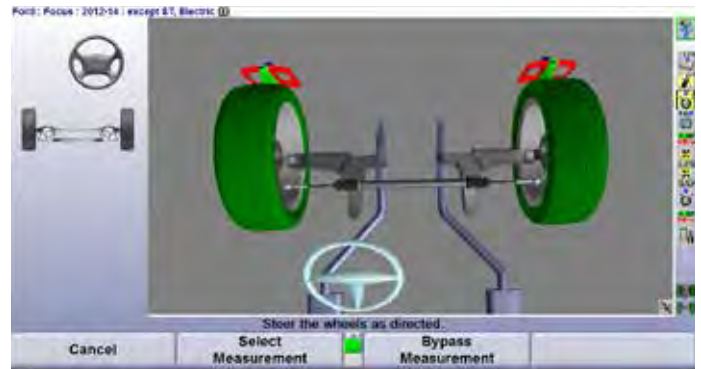


Figure 201

Steering too fast may cause a data collection error and the procedure will have to be restarted.



Figure 202

FasterCaster without the brake pedal depressor is not available on all accounts. The technician will be instructed to use a brake pedal depressor as with a normal caster steer procedure.

### Caster Only

Press “Measure Caster” on the “Vehicle Measurements and Adjustments” primary screen. The “Caster and SAI Measurement” pop-up screen will appear.

If “Caster Only” is not the default:

Press “Select Measurement”, the “Caster Measurement Selection” pop-up screen will appear.

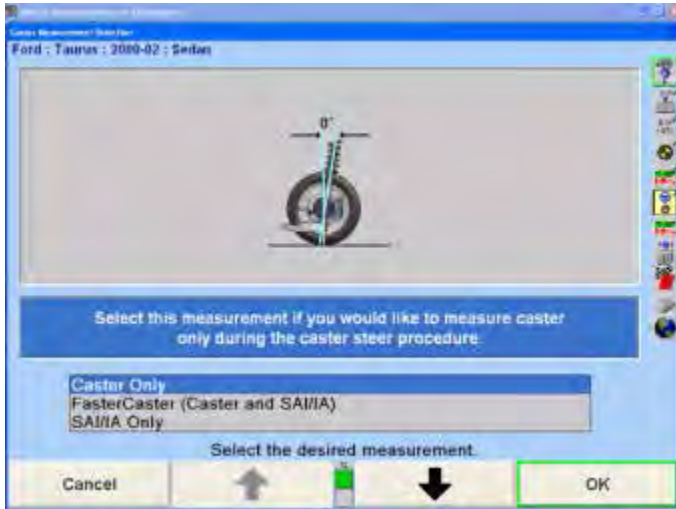



Figure 203

Press  or  until “Caster Only” is highlighted.

Press “OK” to select the measurement. The “Caster and SAI Measurement” pop-up screen will appear.

 This selection will not change the aligner default setting. When the aligner is reset, the default settings will be applied.

Lower vehicle if raised and remove brake pedal depressor if installed.

Loosen the front sensor lock knobs.

A single bar graph is displayed along with a prompt to steer the wheels to the straight-ahead position.

Steer the wheels until the wheel position indicator is within the center valley of the bar graph and hold steady. The aligner will save the measurements and the display will change to show two bar graphs and prompt to steer left. Depending on conditions, you may be required to press “Ready” to continue.

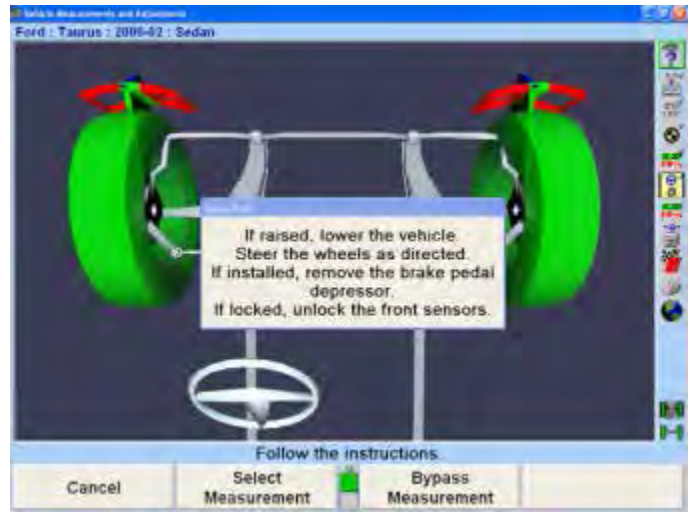


Figure 204

The left bar graph indicator is controlled by the left wheel, the right bar graph indicator by the right wheel.

Observing the bar graph display, steer the wheels to the left until either wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady.

The measurements will be saved and the bar graph will disappear.

Continue to steer the wheels until the remaining wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady until that bar graph disappears.

Two new bar graphs will appear and the steering wheel display will indicate to steer to the right.

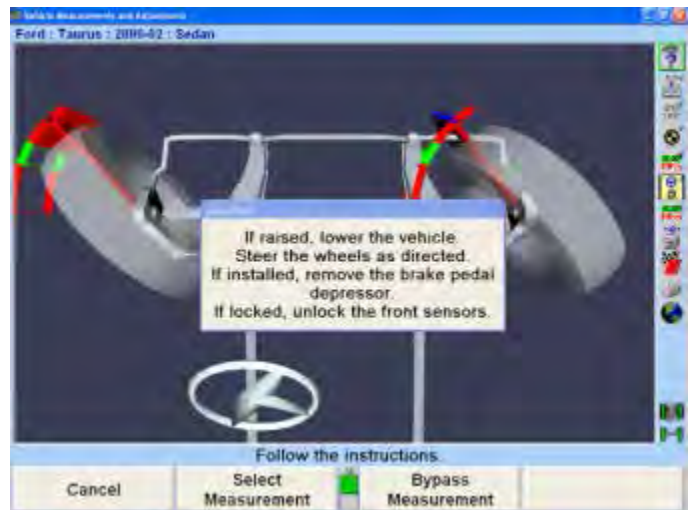


Figure 205

Observing the bar graph or VirtualView display, steer the wheels to the right until either wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady.

The measurements will be saved and that bar graph will disappear.

Continue to steer the wheels as indicated until the remaining wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady until that bar graph disappears.

A single bar graph will appear.

Steer the wheels straight ahead until wheel position indicator is within the center valley of the bar graph. Install the brake pedal depressor and level and lock the sensors.

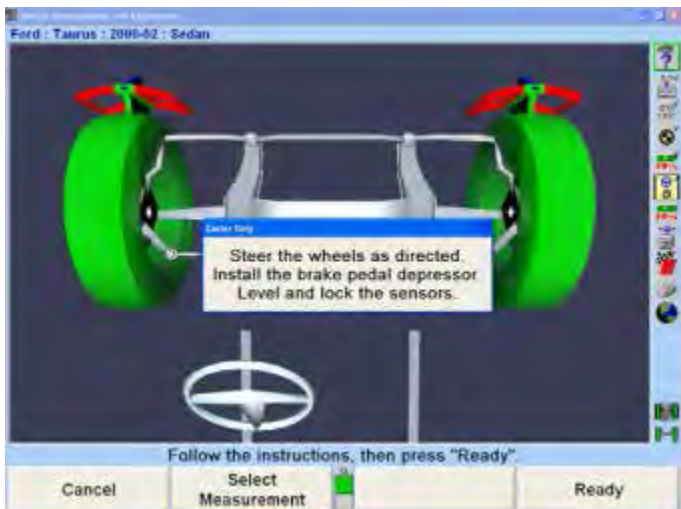


Figure 206

Press “Ready” and the “Vehicle Measurements and Adjustments” primary screen will reappear.

These are the initial measurements of the vehicle. Press “Save Before Measurements” to save them for the printout. If “Set steering wheel status when measurements are saved” is enabled from Aligner Setup, the screen will change to the “Save Before Alignment Measurements” pop-up screen. Refer to “Aligner Set-Up.”

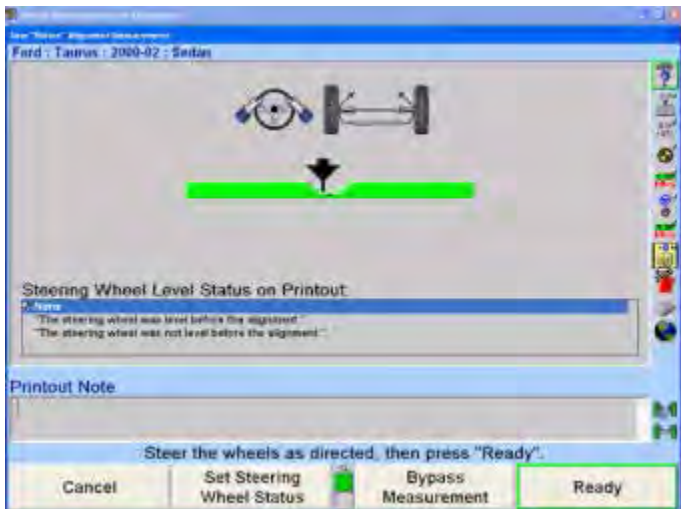


Figure 207

If “Set steering wheel status when measurements are saved” is disabled from Aligner Setup, and all measurements are stable, and the vehicle is steered straight ahead, then the “Save Before Alignment Measurements” pop-up screen will be continued through. The screen will briefly appear and the settings will be automatically saved if everything is stable.

Make sure the vehicle is in the correct condition to save the before measurements. Jounce the vehicle, then steer the wheels straight ahead until the bar graph indicates a null position.

For printouts, highlight the steering wheel level status. This message will be displayed on printouts. In ExpressAlign® it is necessary to steer ahead prior to saving the current status.

Press “Ready”. When the measurements are stable, the program will save them for ExpressAlign, Work Management printout.

The system will save the measurements and the screen will return to the “Vehicle Measurements and Adjustments” primary screen if ExpressAlign is not enabled.

### Measuring SAI and Included Angle

Press “Measure Caster” on the “Vehicle Measurements and Adjustments” primary screen. The “Caster and SAI Measurement” pop-up screen will appear.

If measuring SAI/I.A. Only is not the default:

Press “Select Measurement”, the “Caster Measurement Selection” pop-up screen will appear.

Press  or  until SAI/I.A. Only is highlighted.

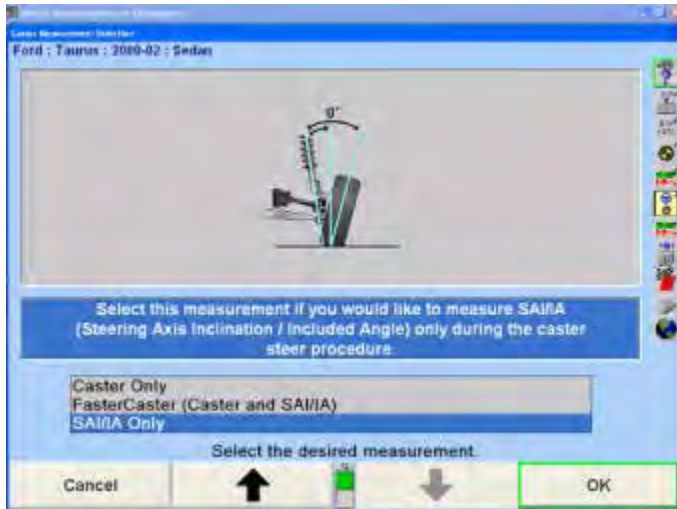


Figure 208

Press "OK" to select the measurement. The "Caster and SAI Measurement" pop-up screen will appear.



This selection will not change the aligner default setting. When the aligner is reset the default settings will be applied.

Lock the front brakes using a brake pedal depressor.

Steer the wheels straight ahead.

Jack up the front axle until the front wheels clear the turning angle gauges or rack. The jack should securely support the vehicle.

Level and lock the sensors.

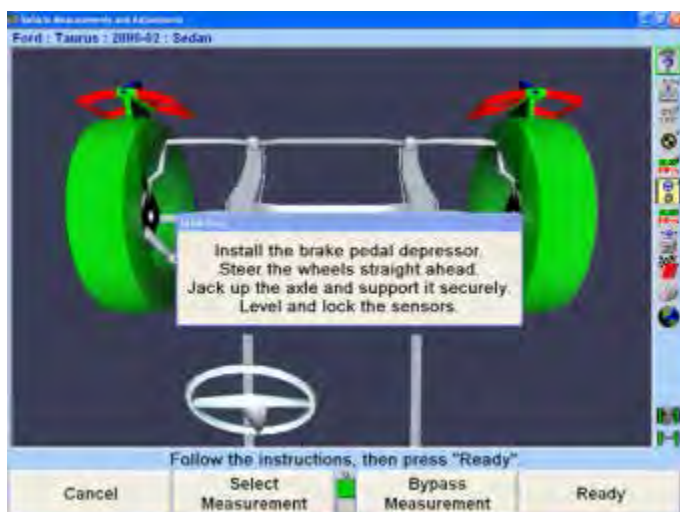


Figure 209

Press "Ready".

Perform the SAI turn while observing the bar graphs in the same manner as the caster turn. Refer to "Measuring Caster," below. When SAI measurements are completed, the screen will change to the Vehicle Measurements and Adjustments primary screen with the SAI and I.A. measurements shown.

Lower the vehicle.



While lowering the vehicle, camber and SAI measurements will change. However, included angle measurements will remain constant.



## Faster Caster® - Measuring Caster and SAI/I.A. Simultaneously

The Faster Caster® measurement feature uses a single bar graph indicator instead of using both a left and right bar graph indicator.

Press "Measure Caster" on the "Vehicle Measurements and Adjustments" primary screen. The "Caster and SAI Measurement" pop-up screen will appear.

If measuring Faster Caster (Caster and SAI/I.A.) is not the default:

Press "Select Measurement", the "Caster Measurement Selection" pop-up screen will appear.

Press  or  until FasterCaster (Caster and SAI/I.A.) is highlighted.

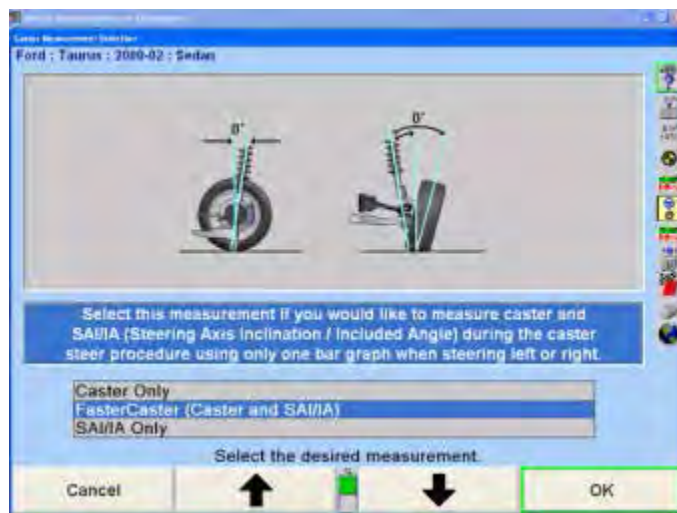


Figure 210

Press "OK" to select the measurement. The "Caster and SAI Measurement" pop-up screen will appear.



This selection will not change the aligner default setting. When the aligner is reset, the default settings will be applied.

Lock the front brakes using a brake pedal depressor.

Steer wheels straight ahead.

Level and lock the sensors.

Press "Ready".

The aligner will save the measurements and the display will change to show a bar graph and prompt to steer left.

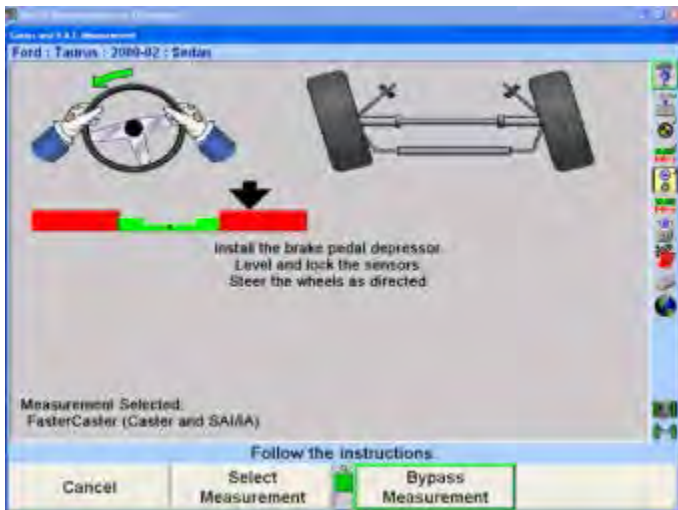


Figure 211

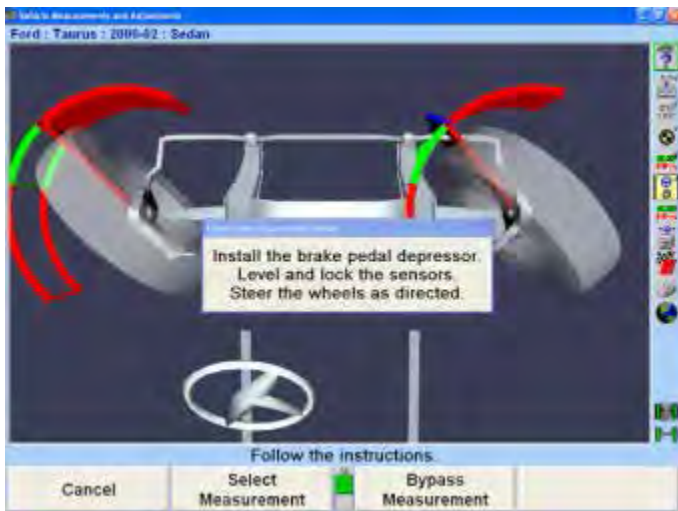


Figure 212

The single left bar graph indicator is controlled by the left wheel.

Observing the bar graph display, steer the wheels to the left until the wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady until the bar graph disappears.

A single right bar graph will appear and the steering wheel display will indicate to steer to the right.

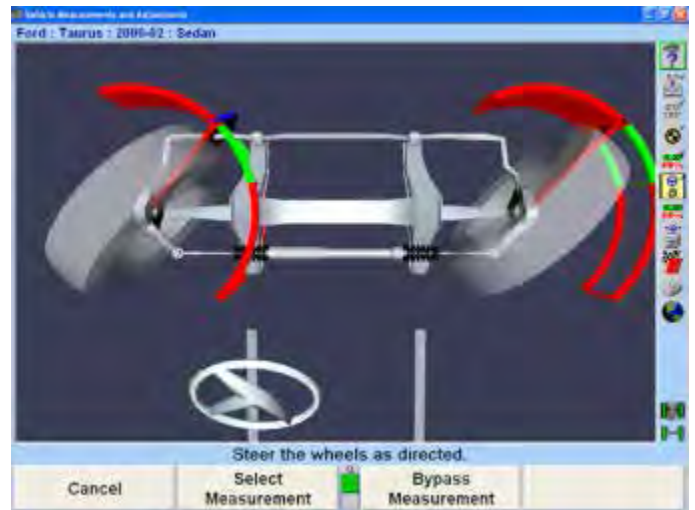


Figure 213

Observing the bar graph display, steer the wheels to the right until the wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady until the bar graph disappears.

A single bar graph will appear.

Steer the wheels straight ahead until wheel position indicator is within the center valley of the bar graph.

When the caster and SAI measurements are completed, the screen will change to the "Vehicle Measurements and Adjustments" primary screen with the caster, SAI, and included angle measurements shown.

### **Live Caster**

If "Verify Caster Adjustment" is not selected in Common Alignment Preferences then the "Verify Caster Adjustment" step is not added to any alignment procedure. Therefore, live caster (Caster Adjust) is the caster measurement that is shown on all printouts under the label of "Caster".

To set up Verify Caster Adjustment, refer to "Aligner Set-Up." Refer to "Setting up the Common Alignment Preferences," on page 170 for detailed instructions.

### **Lock-Check® Sensor Checking Feature**

If either or both of the front conventional sensors are not locked when they are supposed to be locked while measuring Caster/SAI, a Lock-Check® warning message is displayed as soon as the alignment technician starts to steer and a sensor rotates in the wheel adaptor.

Additionally, if the brake pedal depressor is not applied during a Caster/SAI procedure for which the brakes should be locked, the Lock-Check warning message is displayed. The Lock-Check feature can detect the absence of a brake pedal depressor in most cases, however there are some vehicles and conditions under which this condition is not detectable by the Lock-Check feature.

The warning allows the alignment technician to correct the problem and restart or ignore the problem.

## 2.10 Additional Measurements

Selecting “Make Additional Measurements” from the “Vehicle Measurements and Adjustments” primary screen provides a choice of additional measurement procedures.

### *Frame Angle Measurements*

Available for cars and light trucks, this feature is an adaptation of the WinAlign® Heavy Duty software frame angle measurement, which allows proper display of caster for a vehicle that is not level.

Primarily for light duty trucks, WinAlign software will automatically prompt for a frame angle measurement when the vehicle manufacturer specifies that a frame angle measurement should be used while performing an alignment.



Figure 214

Enter the “Left Frame Angle” and then enter the “Right Frame Angle”. Then select “OK”.

Frame Angle can also be accessed by pressing “Make Additional Measurements” on the “Vehicle Measurements and Adjustments” primary screen. The “Additional Angles Measurement” pop-up screen will appear.

### *Measuring Ride Height*



Ride height specifications should be used only as an initial screening test. Measure ride height using the OEM procedure to verify that components meet the OEM requirements.

To access Ride Height select “Make Additional Measurements” from the “Vehicle Measurements and Adjustments” primary screen and select ride height. Ride

Height can also be added in Set up to be included in the Alignment Procedure.

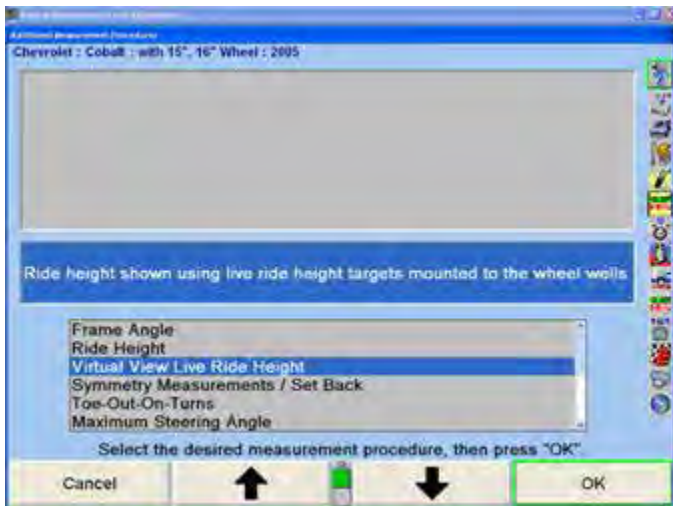


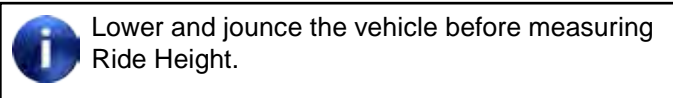
Figure 215

The manufacturer may vary ride height specifications based on suspension and tire options. Those vehicles will have an additional identification screen listing the suspensions or tire options.



Figure 216

Press or to highlight the model variation that applies to the vehicle being measured. The “Ride Height” pop-up screen will appear with the specification. If the model variation is tire size, then select the tire size that is the original equipment of the vehicle.



Three methods of entering the measurements are available:

Manual measurement using keyboard entry

Electronic measurement using the Romess Inclinator (Mercedes Benz Only)

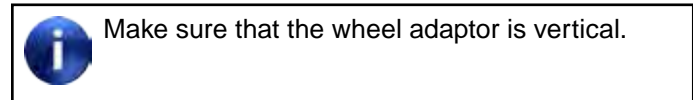
Electronic measurement using the Ride Height Targets

### Measuring Ride Height Using the Keyboard

For manual measurement and keyboard entry:

Press “Enter With Keyboard” to enter measurements using the keyboard.

Measure the distance from the mark on the center casting of the wheel adaptor to the wheel well.



Enter the measurement from the keyboard.



Figure 217

Press “Select Next Wheel”, or to highlight the next wheel or + to highlight the previous field. The program will display the measurement next to the wheel. The center of the corresponding tire on the screen will turn green if the measurement is within specifications or red if out of specifications. It will turn blue if the specifications are not available.

Repeat this procedure with the other wheels.

When the ride height of all the wheels has been measured, press “OK” to save the measurements for printout on the alignment summary.

Ride Height can be re-entered at any time while on the ride height screen. Simply press “Select Next Wheel”, or to highlight the next wheel or + to highlight the previous field. Re-measure the distance from the mark on the center casting of the



wheel adaptor to the wheel well, and then enter the measurement using the keyboard.



Make sure that the wheel adaptor is vertical.

Vertical bar graphs and an illustration of a tire are used to indicate vehicle height in relation to the specification. The center of the bar graph represents the specification.

The large numerical values on the outside of the bar graphs represent the actual measurement. The ideal or preferred adjustment would find the indicator arrow next to the white line of the center bar and the numeric value reading the preferred specification for the vehicle.

### **Measuring Ride Height Using Ride Height Targets**

Ride height can be critical to proper alignment in many vehicles. Improper ride height can affect most alignment adjustments. It can also be a sign of worn or damaged suspension components. Using the ride height targets to show live measurements is a great tool for adjusting ride height without measuring tapes or multiple trips around the vehicle. Any adjustments made using the ride height targets is shown instantly, making the job of adjusting ride height much easier.

Ride Height Targets require WinAlign® 9.0 or higher and DSP600 or HawkEye targets.

### **Installing the Ride Height Targets**

Clean an area on the vehicles wheel well, directly above the spindle.

Apply adhesive strip, 162-122-2, to the ride height target.



Replace the adhesive strip when it becomes excessively dirty or loses its adhering ability.

Secure ride height target to vehicle with adhesive strip, 162-122-2, at the highest point of the wheel well, directly above the spindle. The target should face the same direction as the sensor targets. Make sure the lip on the target is contacting the underside of the fender before pressing the adhesive against the vehicle.



Figure 218

WinAlign® will display an alert if the target is placed incorrectly. Follow the on-screen directions to correct.

Repeat for each wheel.

### **VirtualView® Live Ride Height**



VirtualView® Live Ride Height requires using Ride Height targets. VirtualView must be enabled is Set-up to show VirtualView Live Ride Height. For more information on Live Ride Height Targets refer to Form 5375-T.

VirtualView Live Ride Height displays a live reading of the height difference between the fender well and the spindle. This can be very helpful when adjusting vehicles with torsion bar, air ride or other adjustable ride height suspension.

**TIP:** VirtualView Live Ride Height is a great tool to show the before and after measurements when installing lowering or lift kits on vehicles. Don't forget to give the customer printouts!

Certain vehicles that require ride height measurements will include this feature within the alignment procedure and will display automatically. If ride height is not automatically part of the alignment procedure, select

“VirtualView Live Ride Height” from the “Additional Measurements” menu.

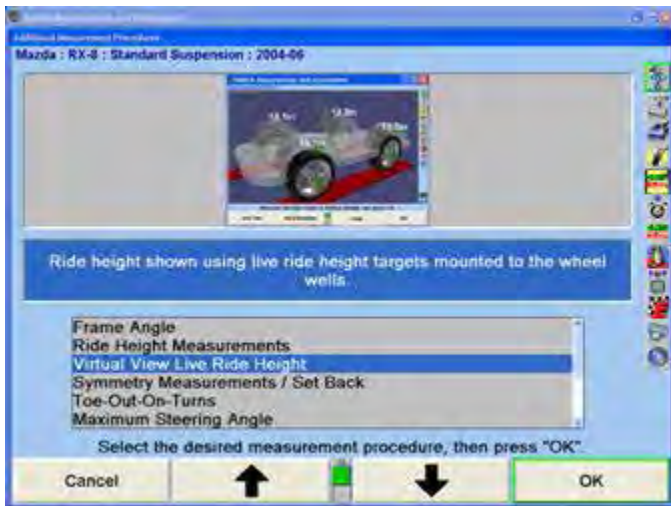


Figure 219

Install the ride height targets on each fender well in line with the spindle, as directed above.



Figure 220

As soon as the targets are detected by the cameras the values will be graphically displayed. Select “Next Position” to rotate vehicle image.

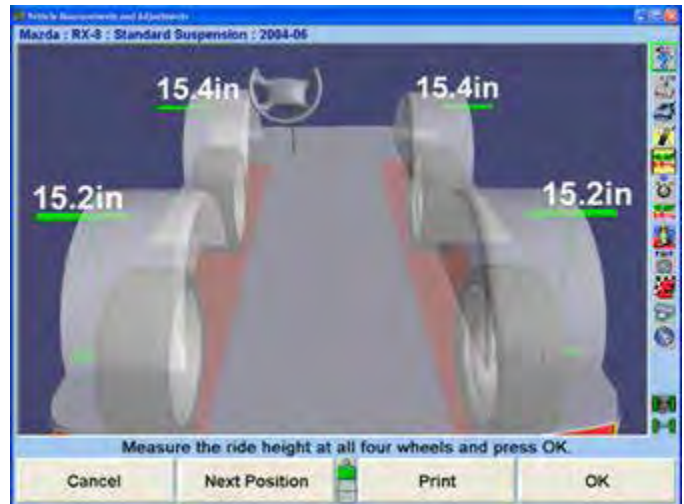


Figure 221

The VirtualView ride height image can be customized selecting different options as shown from the expanded softkeys below. All highlighted keys represent displayed items.

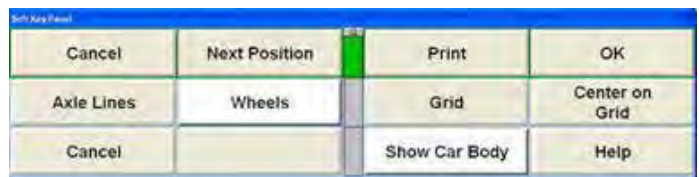


Figure 222

Remove the ride height targets when measurements and adjustments are complete.

### Live Ride Height

**i** DSP600 or HawkEye Targets must be installed along with the Ride Height Targets for WinAlign® to show live ride height measurements.

Live Ride Height measurements may be used with VirtualView® or in bar graph form. If not using Virtual View Live Ride Height, use the following instructions to measure ride height with the Live Ride Height bar graph screen as shown below.



Figure 223

If the “Live Ride Height” screen does not appear automatically as part of the alignment procedure, select “Make Additional Measurements” from the “Vehicle Measurements and Adjustments” screen.

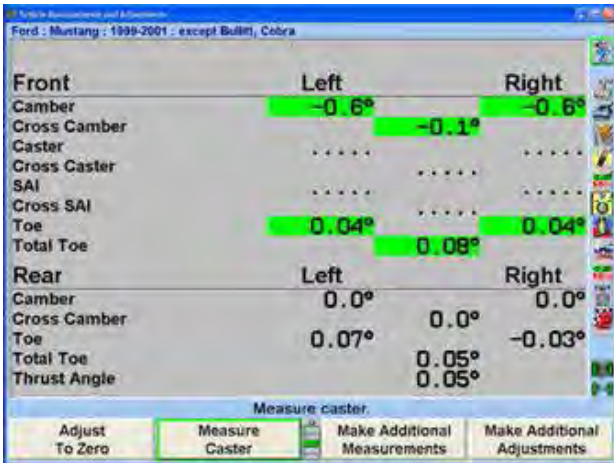


Figure 224

Select “Ride Height” from the menu and press “OK”.



Figure 225

Select “Live Ride Height” to measure ride height using the ride height targets.

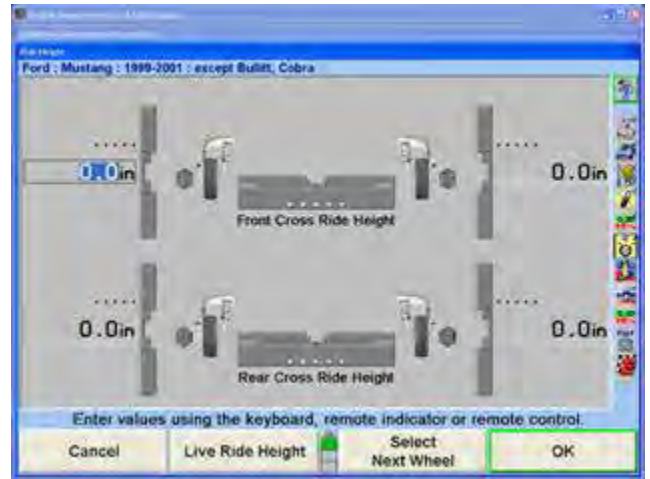


Figure 226

The bar graphs will remain gray unless the selected vehicle has specifications for spindle-to-fender measurements.

WinAlign displays the “Ride Height” screen using live measurements.



Figure 227

The bar graphs will remain gray unless the selected vehicle has specifications for spindle-to-fender measurements.

Remove the ride height targets when measurements and adjustments are complete.

## Measuring Ride Height Using the Romess Inclinometer for Mercedes

When certain Mercedes-Benz vehicles specifications are selected ride height should be measured using a Romess inclinometer.

The M-B Romess tool CM-09606 is used to measure ride height which is required to obtain caster and camber specifications.



Figure 228

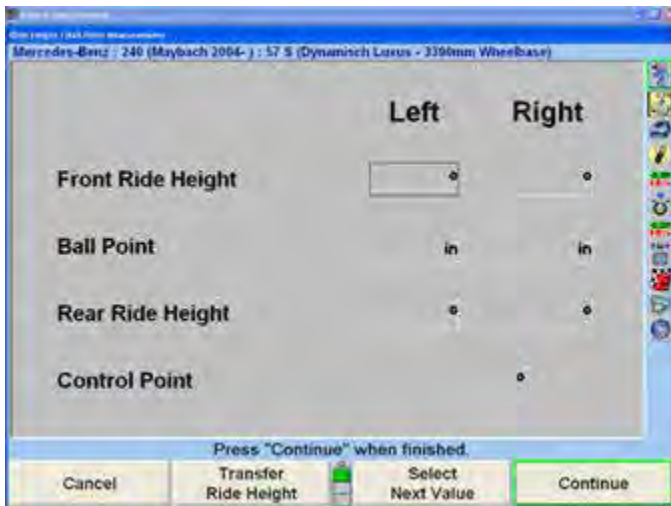


Figure 229

Basic instructions are available under “2.6 Illustrating Vehicle Adjustments.” For specific detailed instructions on the operation of the Romess Inclinometer, please refer to the documentation included with the tool from the manufacturer.

## Ride Height Bar Graphs

A bar graph with a red base and red fender indicates the measurement is below specification. A completely green bar graph and green fender indicates the measurement is within specification. Most vehicles have no upper limit in their specification. A gray bar graph and blue fender indicates specifications are not available.



Figure 230 - Below Specification



Figure 231 - Within Specification



Figure 232 - Specification Not Available

To display the recommended specifications on the bar graphs, press “Show Specs”. If the specifications are displayed, press “Hide Specs” to remove them from the screen.



Ride height can be measured in inches or millimeters.

## Cross Ride Height

Ride Height also displays user-defined cross ride height bar graphs for each axle. This measurement will help to determine if a vehicle is sloping excessively side-to-side indicating potential problems with suspension, frame, or body components.



Figure 233

A positive arrow position on the graph represents a greater amount of ride height on the left side of the vehicle, a negative arrow position represents a greater value on the right side of the vehicle.

There is a “Default Cross Height Spec” softkey that allows entry or deletion of the user-defined specification. The user may define a default cross ride height specification to be applied to all cars for which there is no manufacturer’s ride height specification.

Select “Default Cross Height Spec”. A dialog box will open. Enter the default cross ride height spec and press “OK”.

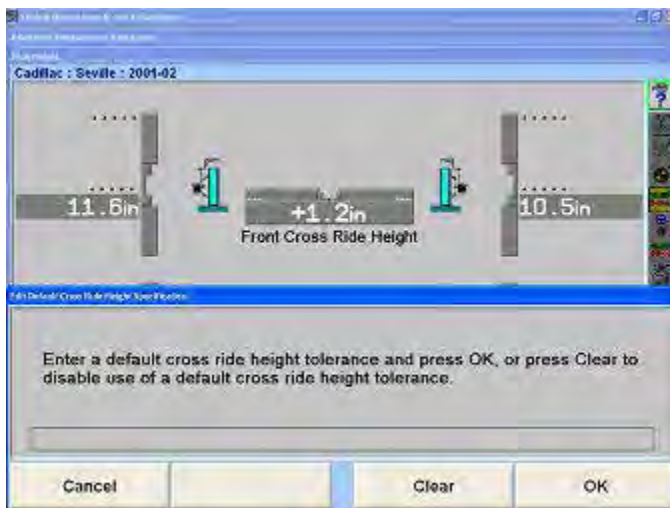


Figure 234

## Ride Height Dependent Specifications

Some manufacturers require ride height to be measured to determine the appropriate alignment specifications. Enter ride height measurement(s) into the left and/or right dialog box of “Manual Entry Ride Height” pop-up screen. WinAlign® will use the ride height data to generate the recommended front and rear camber, caster, and toe specifications.

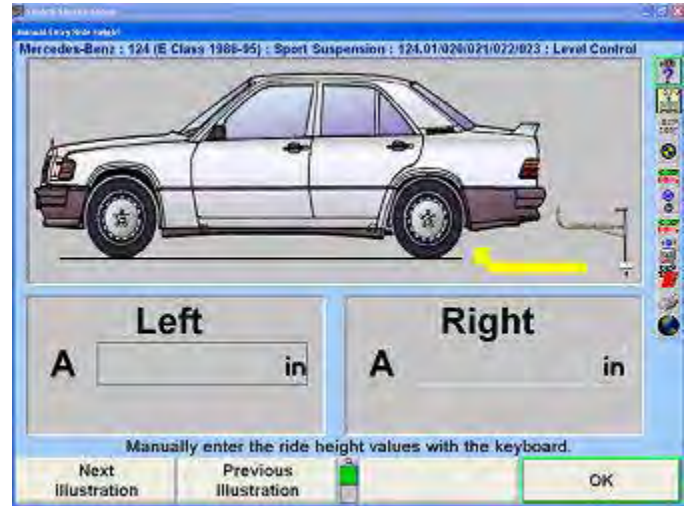


Figure 235

## Zoom

When measuring Ride Height using the RH tool, the aligner will detect which wheel is being measured, and will zoom to the bar graph and image of that wheel. After the measurement has been taken, the fender will turn green if the measurement is within specifications, or red if it is out of specifications, as shown below.



Figure 236

The screen will remain on the individual wheel for about ten seconds, and then it will display all four wheels.

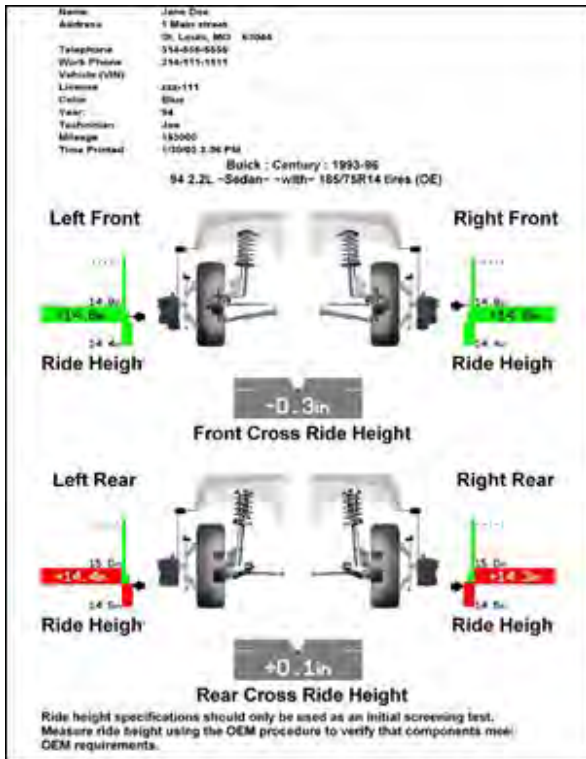
To disable the zoom, press “Disable Zoom”.



The screen will not zoom if the keyboard is being used to enter the measurements.

## Printing Ride Height

When “Print Ride Height” is selected all the bar graphs shown on the screen and any specifications used will be printed.



## Weight at Wheel

Weight at Wheel allows the measurement of the weight at each corner of the vehicle.

Below is a list of the Weight at Wheel measurement softkey functions available.



Figure 238

“Hide Specs” will hide the tolerances in the bar graphs that were set using the last row of softkeys. “Hide Specs” will change to “Show Specs” once pressed. Selecting “Show Specs” will show the specs again.

“Zero Rear Axle Plates” and “Zero Front Axle Plates” will record the weight on the respective axle’s weight measuring turnplates and use it as an offset for all future measurements. “Zero Rear Axle Plates” and “Zero Front Axle Plates” will change to “Clear Rear Axle Plates” and “Clear Front Axle Plates” once pressed. Selecting these softkeys again will clear the weight offset and change the

softkey text back to “Zero Rear Plates” and “Zero Front Axle Plates.”

“Set Plate Configuration” allows the user to configure the number of weight turnplates being used (2 or 4).

“Set Front Axle Cross Tolerance” and “Set Rear Axle Cross Tolerance” allows the user to specify the acceptable weight difference between the right and left-hand sides of the vehicle on the respective axle.

“Set Vehicle Cross Tolerance” allows the user to specify the acceptable weight difference between the front and rear axles.

## Measuring Weight at Wheel

Place a vehicle on the weight measurement turnplates.

Select “Weight at Wheel” in the “Additional Measurement Procedures” popup screen.



Figure 239

Weights of each wheel will be displayed.

## Advanced Vehicle Handling Values

Refer to the “Glossary” for information on the Advanced Vehicle Handling Values.


## Symmetry Angle/Set Back Measurements

The following measurements are available by selecting “Symmetry Measurements/Set Back” from the “Additional Measurement Procedures” screen. WinAlign® 11 includes VirtualView Symmetry Measurements/Setback.”

- Front Set Back
- Rear Set Back
- Wheelbase Difference
- Left Lateral Offset
- Right Lateral Offset
- Track Width Difference
- Axle Offset

### Set Back Procedures


To achieve best results, observe the following practices when measuring symmetry angles:

 Use the same wheel adaptor mounting hardware (i.e. spade sleeves) on all wheels. Mixing different types of wheel adaptors will result in incorrect measurements.

Steer ahead.

Level and lock the sensors.



Make sure the wheel adaptor is vertical if the center casting has been lowered.

 Set Back is accurately measured only when the wheels are steered symmetric about the centerline of the vehicle. This procedure will snapshot the Set Back and Symmetry Measurements when the wheels are steered straight ahead and the “Ready” key is pressed.

To measure Symmetry Angles and Set Back, press “Make Additional Measurements” on the “Vehicle Measurements and Adjustments” primary screen. The “Additional Measurement Procedures” pop-up screen will appear.



Figure 240

Press  or  to select “VirtualView® Symmetry, Wheelbase and Track width” or “Symmetry Measurements/Set Back” and press “OK.”

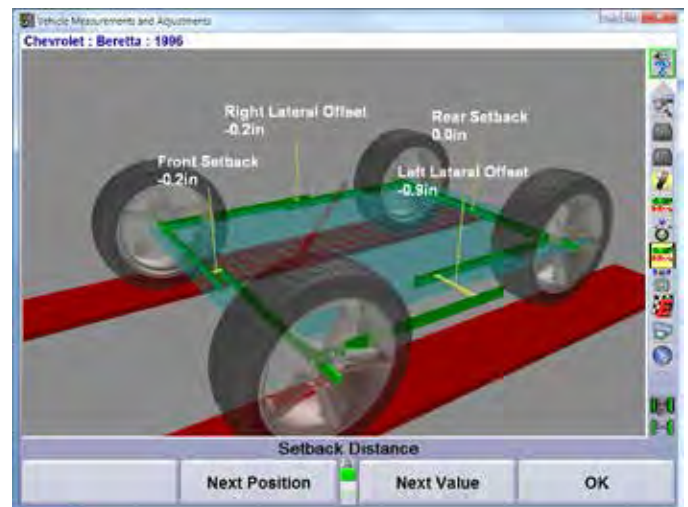



Figure 241

Follow the instructions below as shown on the display.

 Before using Symmetry Measurements, refer to Symmetry Angle/Set Back Definitions for definitions and tips.

Press “Ready”. The screen will display a graphic representation of the symmetry measurements and Set Back with the measured values indicated.

If the Wheelbase and Track Width specifications are available for the current vehicle, the measurements will be displayed as linear distances.

OR

If the Wheelbase and Track Width specifications are not available for the current vehicle, the measurements will be displayed as angles.

**i** To enter Track Width specifications, press Show Secondary Specifications on the Vehicle Specification primary screen. Enter the front track width into the Track Width Dialog Box. Press Show Rear Axle on the Vehicle Specification primary screen. Enter the rear Track Width into the Track Width Dialog Box.

**i** These angles are shown on the screen and on the printout only if they have been measured.



Figure 244

**Toe-Out-On-Turns**

**i** To perform this procedure, electronic turnplates, DSP sensors with the optional Toe-Out-On-Turns kit, DSP300 conventional, or Camera Based optical sensors are required. To select sensors or turnplates, refer to "Aligner Set-Up."

Measuring Toe-Out-On-Turns can help find worn or bent steering/suspension components.

Press "Make Additional Measurements" on the "Vehicle Measurements and Adjustments" primary screen. The "Additional Measurement Procedures" pop-up screen will appear.

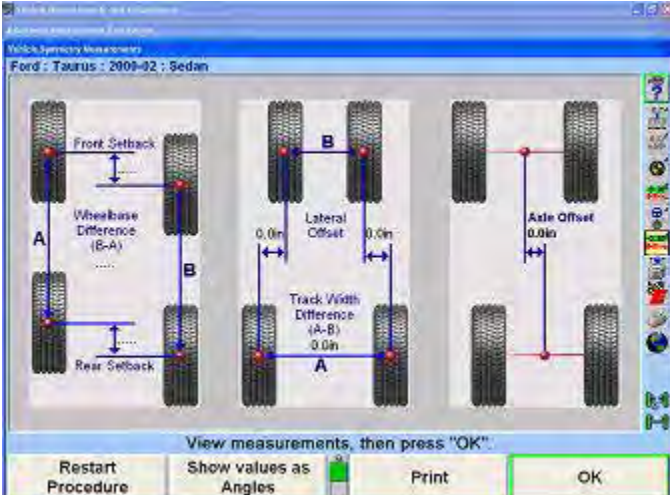


Figure 242 - Linear Distances

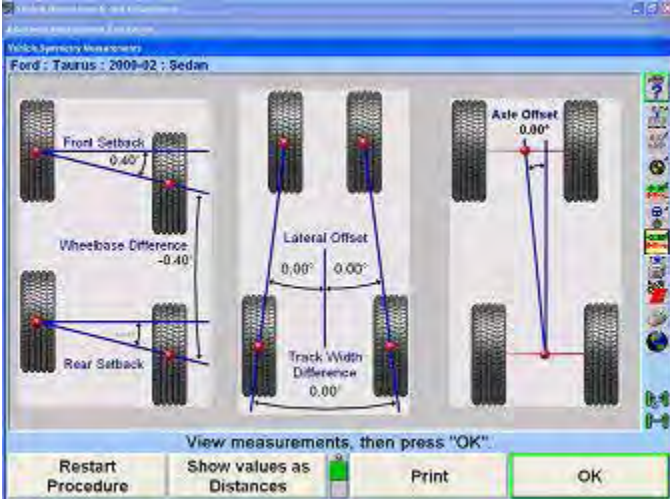


Figure 243 - 180° Angles

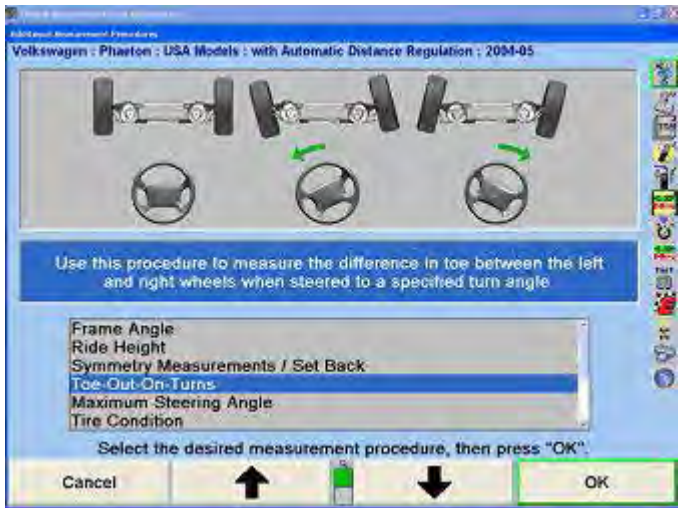


Figure 245

Press or to select "Toe-Out-On-Turns", then press "OK".

If using DSP sensors with Toe-Out-On-Turns kit:



Connect elastic toe lines and adjust until taut.

A single bar graph on the display will prompt to steer the wheels to the straight ahead position. If the sensors are compensated, the bar graph will be red. If the sensors are not compensated, the bar graph will be gray.

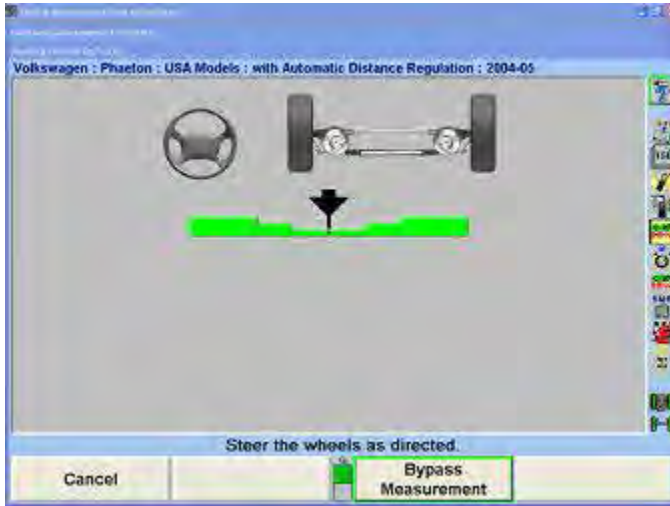



Figure 246

Steer the wheels until the wheel position indicator is in the center valley of the bar graph.

 If sensors are not compensated and electronic turnplates are being used, press Initialize Turnplates.

The program will save the measurements and the display will change to show two bar graphs and prompt to steer left.

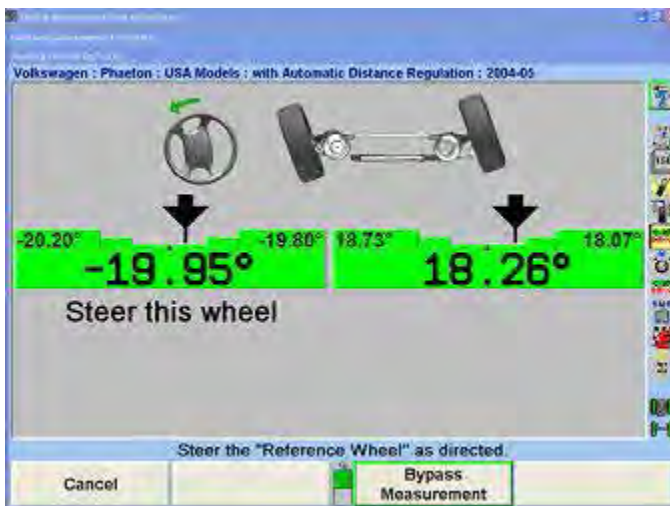


Figure 247

Observing the bar graphs, steer the wheels to the left until the indicated steer wheel position indicator is within the center valley of the bar graph.

Hold the steering wheel steady. The measurements will be saved.

If Toe-Out-On-Turns specifications have not been entered for the selected vehicle, steer to the desired angle, then press "Store Measurements". The measurements will be stored for later computations.

Two new bar graphs will appear.



Figure 248

Observing the bar graph, steer the wheels to the right until the indicated steer wheel position indicator is within the center valley of the bar graph.

Hold the steering wheel steady. The measurements will be saved.

If Toe-Out-On-Turns specifications have not been entered for the selected vehicle, steer to the desired angle, then press "Store Measurements". The measurements will be stored for later computations.

A single bar graph will appear.

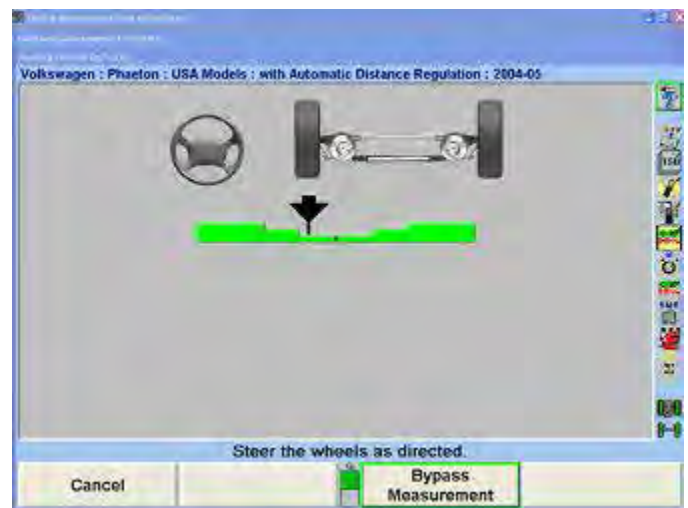


Figure 249

Steer the wheels until the wheel position indicator is within the center valley of the bar graph. The measurements will be saved and the screen will return

to the “Vehicle Measurements and Adjustments” primary screen.



Figure 250

The Toe-Out-On-Turn results are displayed as “Left Turn Diff.”, which is the toe difference between the left and right wheels when steered to the left, and “Right Turn Diff.”, which is the toe difference between the right and left wheels when steered to the right. If these measurements are not within specifications, the steering mechanism should be inspected for worn or damaged parts.

### Maximum Steering Angle



To perform this procedure, electronic turnplates or DSP sensors with the optional Toe-Out-On-Turns kit are required. Manual entry of data is also available. To select sensor or turnplates, refer to “Aligner Set-Up.”

Measuring maximum steering angles (lock-to-lock steering) can help find worn or bent steering/suspension components.

Press “Make Additional Measurements” on the “Vehicle Measurements and Adjustments” primary screen. The

“Additional Angles Measurement” pop-up screen will appear.

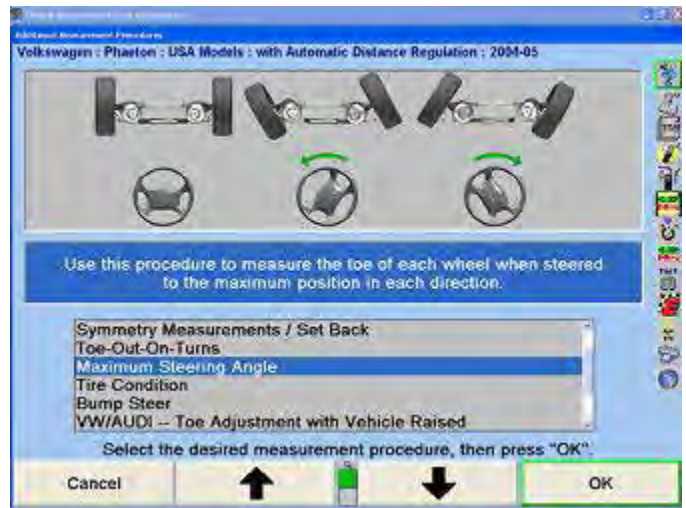




Figure 251

Press  or  to select “Maximum Steering Angle”, then press “OK”. A single bar graph on the screen will prompt to steer the wheels to the straight ahead position.

If using DSP sensors with Toe-Out-On-Turns kit, connect elastic toe lines and adjust until taut.

A single bar graph on the display will prompt to steer the wheels to the straight ahead position. If the sensors are compensated, the bar graph will be red. If the sensors are not compensated, the bar graph will be gray.

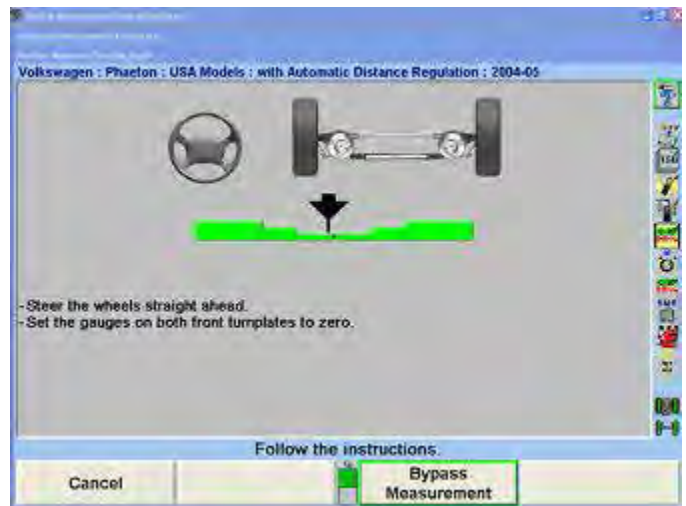


Figure 252

Steer the wheels until the wheel position indicator is in the center valley of the bar graph.



If sensors are not compensated and electronic turnplates are being used, press “Initialize Turnplates”.

If a caster steer has been performed, press "Ready".




Figure 253

The program will save the measurements and the display will change to show two bar graphs and prompt to steer left.

Steer the wheels left until the steering wheel stops at the lock. The lock angles are displayed on the monitor.


If a wheel stops moving for more than two seconds after the measurement is above 25 degrees, the program will store the measurements. This feature is called Auto Store. If Auto Store is not desired, pressing "Disable Auto Store" can turn it off. If disabled, press "Store Measurements" when the wheels are at their maximum steering angle.

 If the measurement is stored before the wheel reached the lock position, press "Cancel" and restart the procedure.

The screen will change to prompt for a right turn.

Steer the wheels right until the steering wheel stops at the lock. The lock angles are displayed on the monitor.

Once the measurement is above 25 degrees, if a wheel stops moving for more than two seconds the program will store the measurements.

 If the measurement is stored before the wheel reached the lock position, press "Cancel" and restart the procedure.

Steer the wheel back to the center valley position of the bar graph.

Press "Ready" if the caster measurement was previously taken.

The display will change to the alignment measurements display. The results are shown as "Maximum Left Turn" and "Maximum Right Turn". If these measurements are not within specifications, the steering mechanism should be inspected for worn or damaged parts.

### Tire Condition

The tread condition, tread depth, and tire pressure should be evaluated, before continuing with the alignment procedure.

Tire Condition may be enabled in Aligner Setup as an alignment procedure or can be selected from "Additional Measurements". Tire inspection allows tread wear, tread depth, and tire pressure to be documented in the alignment procedure.

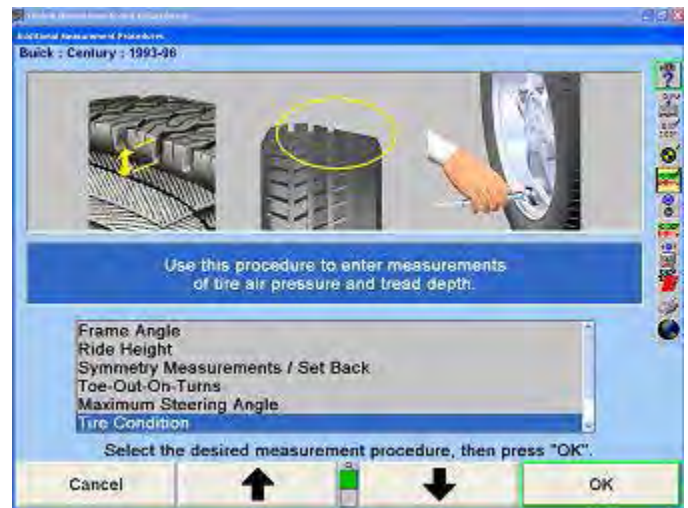


Figure 254

Having a tire with a tread condition, marginal tread depth, or not inflated to the manufacturers inflation specification may result in an out of alignment complaint even if the vehicles alignment is within specifications.

The selected tire for inspection can be changed by selecting “Next Wheel” or by selecting the desired wheel icon in the upper right-hand corner of the screen.



Figure 255

The inspection selection can be changed by selecting “Tread Condition”, “Tread Depth” or “Tire Pressure” from the softkey menu or using the icons in the upper left-hand corner of the screen.



Figure 256 - Tread Condition



Figure 257 - Tread Depth



Figure 258 - Tire Pressure

From the “Tread Condition” screen, an assortment of tread conditions are available for selection for each wheel. “Normal Wear” selection will appear green when selected. Marginal conditions like cupping or feathering will appear in yellow. Hazardous conditions such as tread or ply separation will appear red when selected.



Figure 259

Selecting the “Tread Depth” icon will display the “Tread Depth” pop-up screen. The “Tread Depth” pop-up screen documents the tread depth of each tire.

### Handheld Tread Depth Tool

If enabled in the setup menu, the Handheld Tread Depth tool is integrated with the alignment process in WinAlign14.3 and above.

Press the “Wake Up” button to begin communication with the console. The tool LED’s will indicate the specific location of the current measurement for both one point and three point measurements.



Figure 260

Depress the tread depth plunger into the tread of the tire and hold it steady until the reading is confirmed. The tool will vibrate when the reading is confirmed and automatically advance to the next location, indicated by the LED’s and the measurement screen.

A three point measurement may be desired to accurately document an irregular tire wear pattern as measurements are recorded for three locations across the tread surface.

One or three point measurement procedures can be selected from the first row of softkeys.



Figure 261

Pressing the “Wake Up” button during the process will clear the previous measurement and step backward so that location can be re-measured.

The smallest measurement taken for each tire is entered into the corresponding data box for all four tires. Any tires with measurements that are under specifications are shown in red.

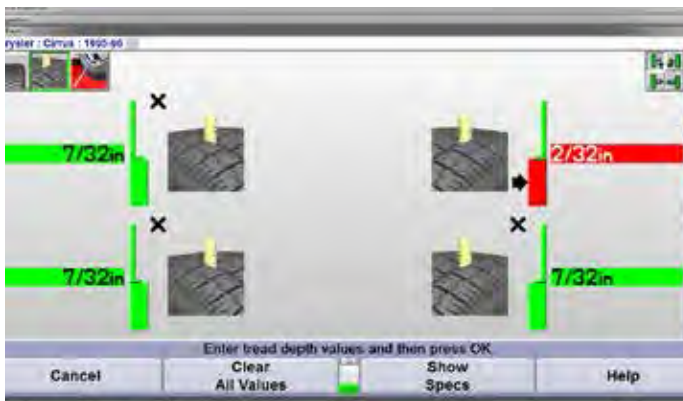


Figure 262

Specifications for pass, marginal and failed tread depth values as well as default one or three point measurement options are available in aligner setup. Refer to “5.16 Tread Depth,” on page 210 for detailed instructions.

### **Manual Tread Depth Entry**

Readings can also be entered with the keyboard, measure the tread depth and enter the values in the corresponding fields.

Selecting “Three Point Tread Depth” or “Zoom In” allows the tread depth of each tire to be entered for one to three locations across the tread. Depth should be measured in even intervals across the entire tread area.

Enter the depth of each location then select “Next Position”. Repeat this procedure for each tire by selecting “Next Wheel” (Figure 266).



Figure 263

The smallest measurement taken for each wheel is entered into the corresponding data box for all four tires. Any tires with measurements that are under specifications are shown in red.

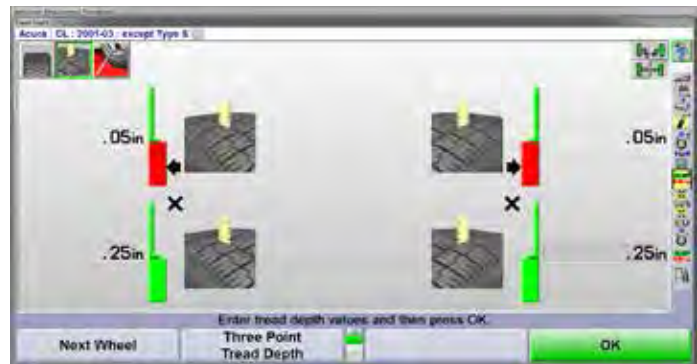


Figure 264

The measurement units and fail/marginal tread depth specifications can be changed in Aligner Setup. Refer to “Setting Up the Alignment Measurement Units and Formats” on page 173 and “5.16 Tread Depth” on page 210 for more information.

### **Tire Pressure**

Selecting the “Tire Pressure” icon will display the “Tire Pressure” pop-up screen. The “Tire Pressure” pop-up screen allows you to document the inflation level of each tire. If all tires are set to the same specification, select “Filled to Spec”.



Figure 265

Enter the tire pressure specification that all tires were set to and select “OK”.



Figure 266

The tire pressure screen will be updated to show all tires filled to specification.

Selecting “Print” from any of the tire inspection screens will print the tire inspection information. Print should be selected after all tire inspection information has been entered.

After evaluating tread condition, tread depth, and tire pressure, select “OK” to exit the Tire Inspection procedure.

### Bump Steer Measurement Overview

Bump Steer measures the amount of toe change caused by the steering mechanism (linkage and/or rack and pinion) not remaining parallel to the road surface. This is most notable in toe changes caused by dips or bumps in the road.



From the “Vehicle Measurements and Adjustments” screen, press “Make Additional Measurements” and the “Additional Measurement Procedures” pop-up screen will appear as shown below. Press  or  to select “Bump Steer” and press “OK”.



Figure 267

The initial Bump Steer measurement screen will appear. Steer the vehicle straight ahead according to the bar graph and select “Ready”.



Figure 268

Below is a list of the Bump Steer measurement softkey functions available.

Soft Key Panel			
Exit	Down	Up	Snapshot Values
Restart Procedure	Undo last Snapshot	Save Before Measurements	Hide "Before" Measurements
Print	Clear current values		
Save Values	Load saved values	Load for comparison	Copy Chart to clipboard
Show File Information	Show Comparison File Info		Help

Figure 269

Select “Up” or “Down” when raising or lowering the vehicle on the rack. Height will be illustrated in .5 increments. The bar graphs are live and will reflect any changes in alignment angles. The drop-down menu offers a list of different angle views.

“Snapshot Values” will take an immediate image of the incremental measurements. “Undo Last Snapshot” will remove the previous incremental image snapshot.

“Save Before Measurements” will save the current collective bump steer measurements as before measurements, indicating the initial status of the vehicle. “Hide Before Measurements” will hide the before measurements from the screen. Select “Clear Current Values” to remove the values completely.

Select “Save Values” to save the measurements to USB drive. “Load Saved Values” will retrieve measurements from USB drive. “Load for Comparison” downloads the measurements to the screen indicated by a dotted line for comparison to current live readings.

“Copy Chart to Clipboard” saves the current visible chart to the Windows® clipboard. Run the WordPad program and select paste to transfer the chart as an image to a WordPad document.

“Show File Information” displays the specifics of the current measurements in tabulated text format. “Show Comparison File Info” displays the same information for the loaded comparison file.

Select “Print” to print all the measurements charts.

### ***Bump Steer Measurement Using Live Ride Height Targets Overview***

Bump Steer measures the amount of toe change caused by the steering mechanism (linkage and/or rack and pinion) not remaining parallel to the road surface. This is most notable in toe changes caused by dips or bumps in the road.



From the “Vehicle Measurements and Adjustments” screen, press “Make Additional Measurements” and the “Additional Measurement Procedures” pop-up screen will appear as shown below. Press  or  to select “Bump Steer” and press “OK”.



Figure 270

The initial Bump Steer measurement screen will appear. Mount the live ride height targets, steer the vehicle

straight ahead according to the bar graph and select “Ready”.



Figure 271

Below is a list of the Bump Steer measurement softkey functions available.

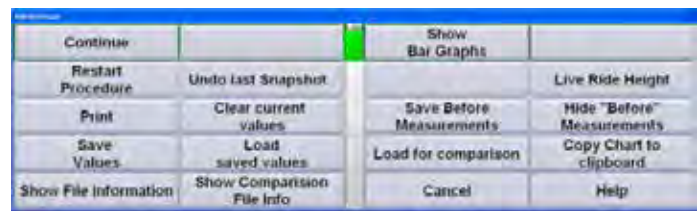


Figure 272

The bar graphs are live and will reflect any changes in alignment angles. The drop-down menu offers a list of different angle views.

“Save Before Measurements” will save the current collective bump steer measurements as before measurements, indicating the initial status of the vehicle. “Hide Before Measurements” will hide the before measurements from the screen. Select “Clear Current Values” to remove the values completely.

Select “Save Values” to save the measurements to a hard drive or USB drive. “Load Saved Values” will retrieve measurements. “Load for Comparison” downloads the measurements to the screen indicated by a dotted line for comparison to current live readings.

“Copy Chart to Clipboard” saves the current visible chart to the Windows® clipboard. Run the WordPad program and select paste to transfer the chart as an image to a WordPad document.

“Show File Information” displays the specifics of the current measurements in tabulated text format. “Show Comparison File Info” displays the same information for the loaded comparison file.

Select “Print” to print all the measurements charts.

## Measuring Bump Steer



SoundGuide® should be turned on when measuring Bump Steer with Live Ride Height Targets.

Follow the instructions on the screen. WinAlign will take a snapshot at ride height.

Raise the vehicle in small increments and pause (5-10 seconds) between each raise. WinAlign will take a snapshot after the vehicle is stable after each movement. If SoundGuide is turned on, a tone will confirm the snapshot has been taken. Snapshots can be taken as often as desired.

Raise the vehicle at least three inches to measure incremental changes. Use the drop-down menu to select different angle views. Using the mouse to select various snapshots will produce a VirtualView image of the front wheels.

Click and hold the left mouse button and move the mouse around the bar graph to change the VirtualView image displayed. This will also break the chart up into three columns representing the left side of the vehicle, a center view, and a right side view. Holding the mouse over a measurement line on the chart will display the exact measurements.

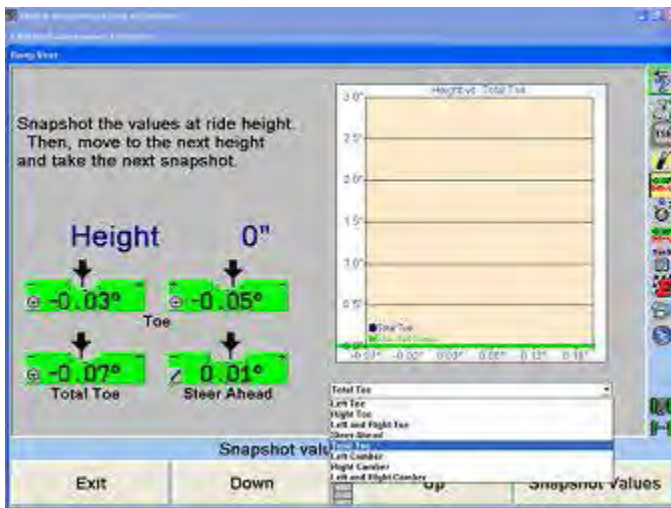


Figure 273



Figure 274

After lifting the vehicle to a desired height, lower the vehicle to ride height. At ride height connect the Bump Steer Winch. Refer to "Installation and Operation Instructions for Bump Steer Winch Kit, 20-2011-1," Form 5347-T.

Using the winch, lower the vehicle below ride height, continuing to take snapshots at various increments.



The tires should not be raised off the turnplates and the vehicle should not be lowered onto the strikeout bumpers.

Once all measurements have been captured, select "Save Values" to store measurements to the hard drive or USB drive. These measurements can be recalled at any time. A note can be stored with the readings. Enter any specific text necessary to be stored with the measurements and select "OK". Insert a USB drive and select "Save". A custom name can be entered, otherwise the measurements will be saved under the specs name (i.e. FordFocus2005exceptWagon.txt).



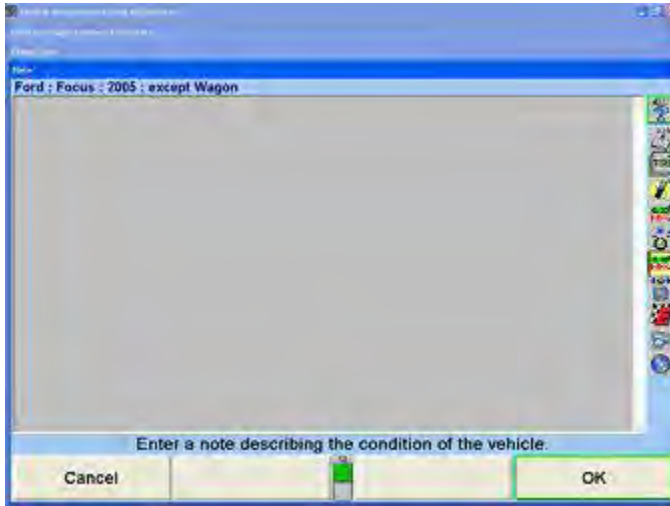


Figure 275



Figure 276

Saved results can later be uploaded by selecting “Load for Comparison”. When the softkey is selected, choose the location on the PC (or USB drive) where the .txt resides. Select the file and click “Open”. The image of the saved results will display as a dotted line.

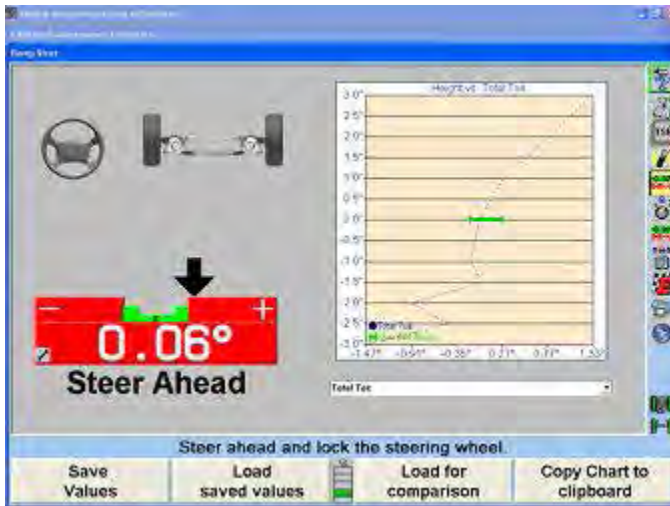


Figure 277

Selecting “Print” while on the chart screen will offer the option of printing “Before” or “Current” measurements or both together in chart form.

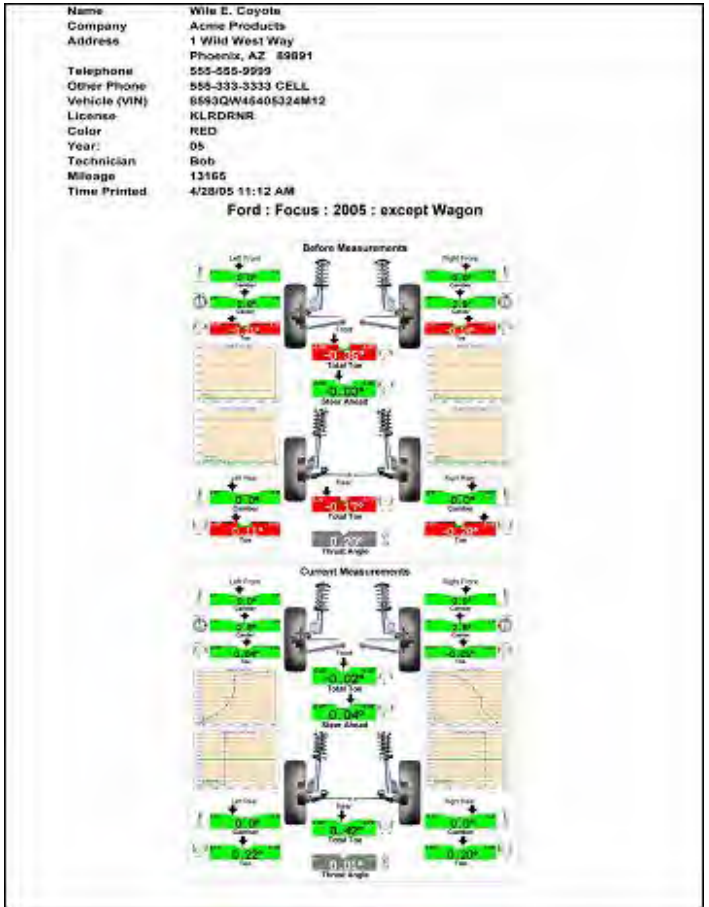


Figure 278

Select “Show File Information” or “Show Comparison File Info” to view table formatted text of the measurements.

These files can also be printed and will include all readings and customer information, if entered.

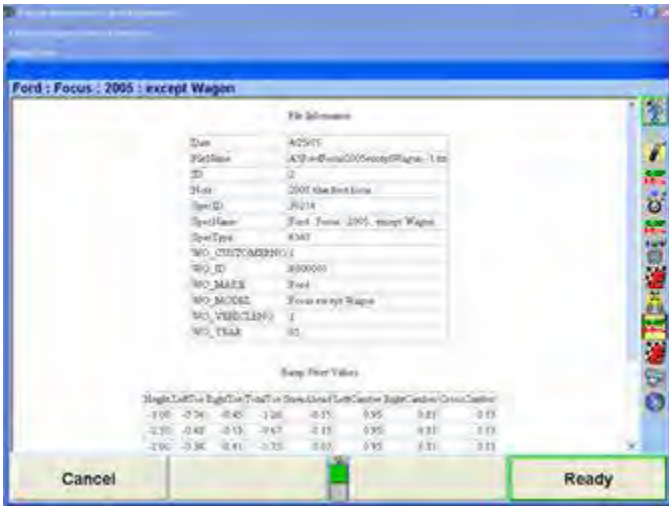


Figure 279



Figure 280

Select "Exit" when all measurements have been completed and reviewed.

### Toe Raised Procedures

The Toe Raised Procedure is an adjustment that is required for some specific VW/AUDI models. If one of these models is recalled from the specification database, the Toe Raised Procedure will be automatically entered during the alignment procedure. If the indicated special tools are not available, this measurement and adjustment cannot be made. A flow chart of the Toe Raised Procedure is added to the end of this section for reference.

From the "Vehicle Measurements and Adjustments" screen, press "Make Additional Measurements" and the

"Additional Measurement Procedures" pop-up screen will appear as shown below.

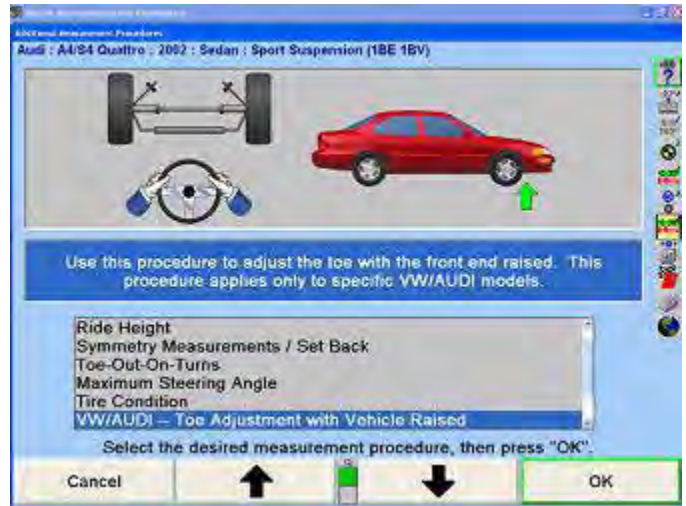


Figure 281

Press or to select "VW/AUDI - Toe Adjustment with Vehicle Raised" and press "OK".

At the "Toe Adjustment with Vehicle Raised" screen will be several messages why a vehicle may need a Toe-Adjustment with vehicle Raised. Such conditions as:

- Steering or suspension components have been replaced.
- There are damaged parts on the steering/suspension system or body.
- Customer complains about abrupt steering wheel movement when traveling over bumps or valleys.

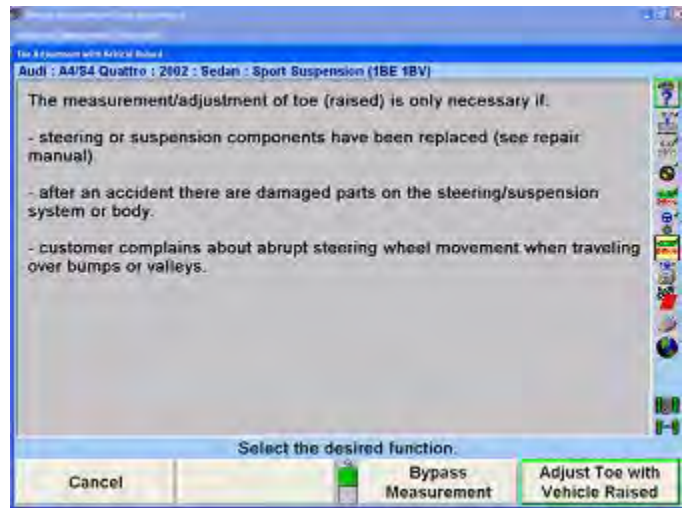


Figure 282

Selecting "Adjust Toe with Vehicle Raised" will display the following screen. The screen will show a picture of the VAG extender or adaptor. This assembly will vary according to the specification (A4 A6, A8 or Passat Sport) of the vehicle. Follow the instructions on the screen.



When using the special tool with extenders, make sure of good contact around subframe mounting points for safety and to prevent damage to undercarriage or suspension system.

Install special tool as shown.

Unscrew spindles until they make contact around vehicle subframe mounting bolts.



Figure 283

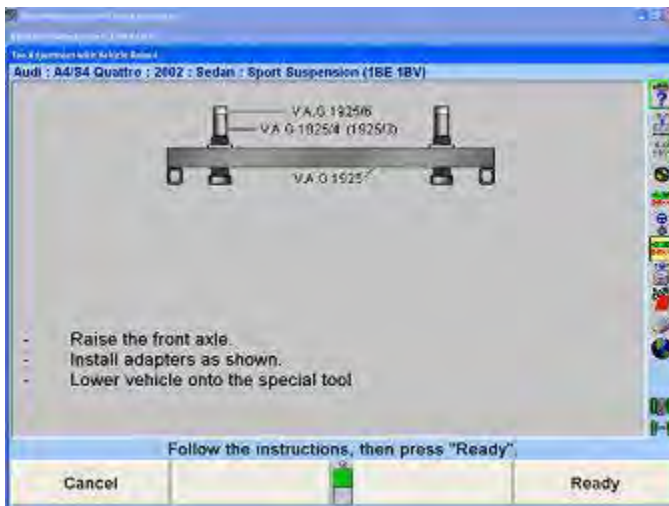


Figure 284

Press "Ready" and the following screen will appear. The screen will present an illustration of the proper place of adjustment and two adjustment bars (left and right).

Proceed with the following instructions.

Level and lock the sensors.

When toe is within specifications, press "Ready".

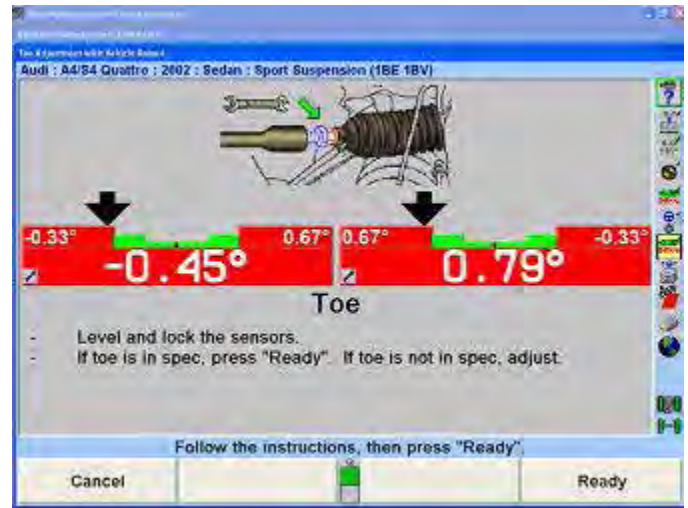


Figure 285

Press "Ready" and the screen will display the special tool assembly for Toe Raised Vehicles with the following instructions.

Raise the front axle.

Pull up cylinder, insert and secure pin as shown.

Lower vehicle onto the special tool.

There are several extenders and adaptors that are used with the VAG special tool. The appropriate extender or adaptor will be indicated in accordance with the vehicles specifications.

Extenders or Adaptors:

VAG 1925 = Special tool

VAG 1925/1 = A8 70mm extender

VAG 1925/2 = A8 18mm extender (used in most cases)

VAG 1925/3 = A4 105mm extender

VAG 1925/4 = A4 85mm extender (used in most cases)

VAG 1925/5 = A8 33mm adaptor (used for sport version)

VAG 1925/6 = A4 22mm adaptor (used for sport version)



Using the pins to extend the cylinder upward inside the tool will allow the vehicle to rest at the correct height for raised toe measurements. The wheels themselves may or may not be resting partially on the turnplates.

Press "Ready" and the screen will display the following instructions.

Raise the front axle.

Pull up cylinder, insert and secure pin as shown.

Lower vehicle onto the special tool.



Figure 286

Pressing "Ready" will display the "Toe Adjustment with Vehicle Raised" screen shown below. This screen is not an active screen, as the warning message in yellow will show.

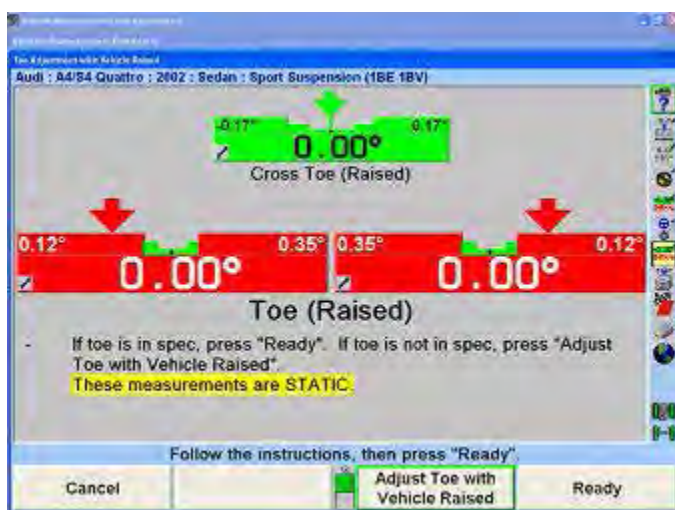


Figure 287

Pressing "Adjust Toe with Vehicle Raised" will move the user to an active (adjustable) screen. Continue to adjust the vehicle to within specification.



Figure 288

Pressing "Ready" will display the screen below and the following instructions.

Lower the vehicle and jounce the axle.

Level and lock the sensors.

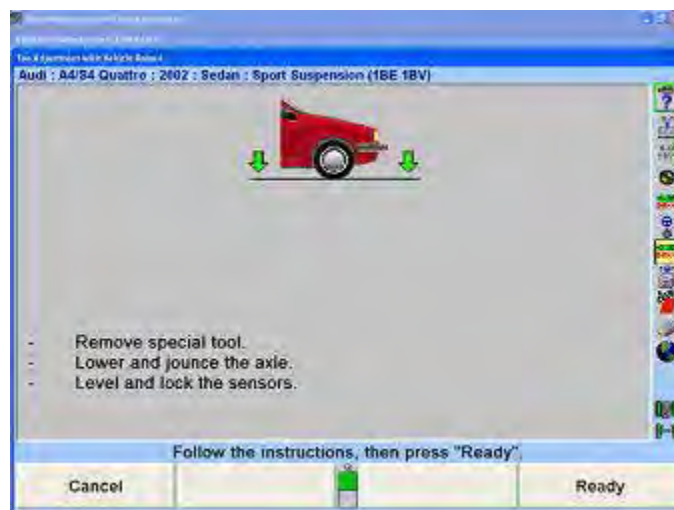


Figure 289

Pressing "Ready" will display the adjustments made. If adjustments are not within specification (negative or positive), move toe within specifications by repeating the procedures again through Adjust Toe with Vehicle Raised until vehicle acquires the required specification. The results of the adjustments can be viewed on the measurement screen or the printout.

## VAG Flowchart

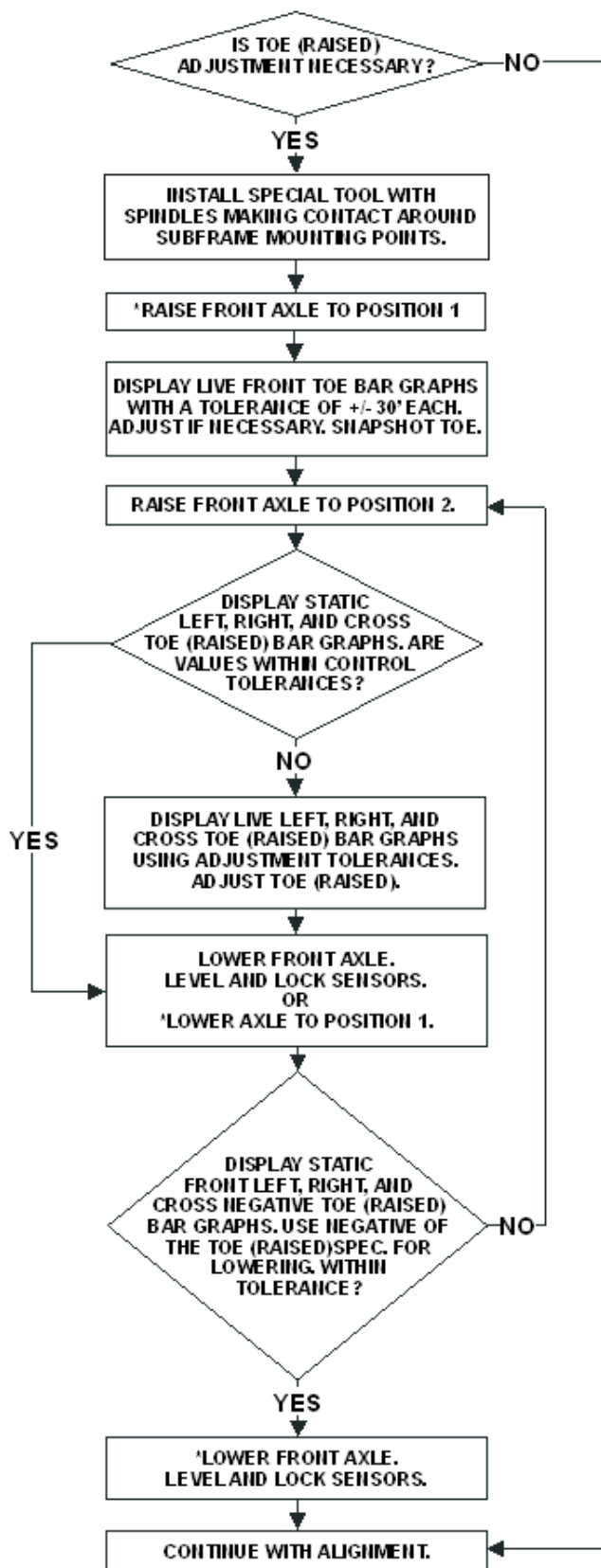


Figure 290

## Tire Information

Tire information entered in the “Edit Tire Information” pop-up screen will appear on the printout summary.

From the “Vehicle Measurements and Adjustments” screen, press “Make Additional Measurements” and the “Additional Measurement Procedures” pop-up screen will appear as shown below.

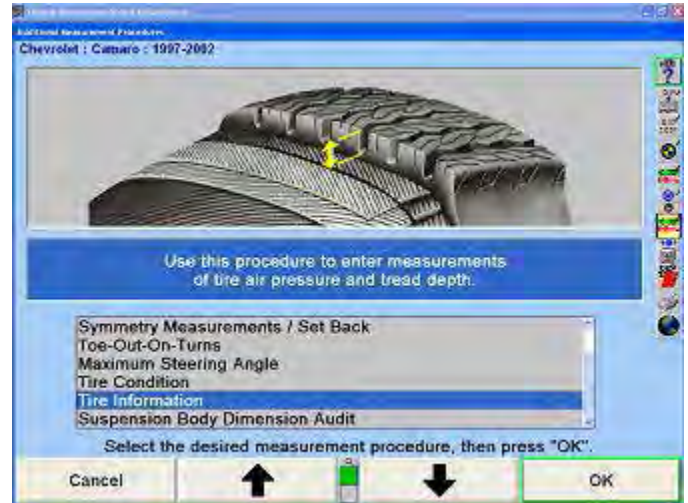




Figure 291

Press  or  to select Tire Information and press “OK”. The “Edit Tire Information” pop-up screen will appear as shown below.

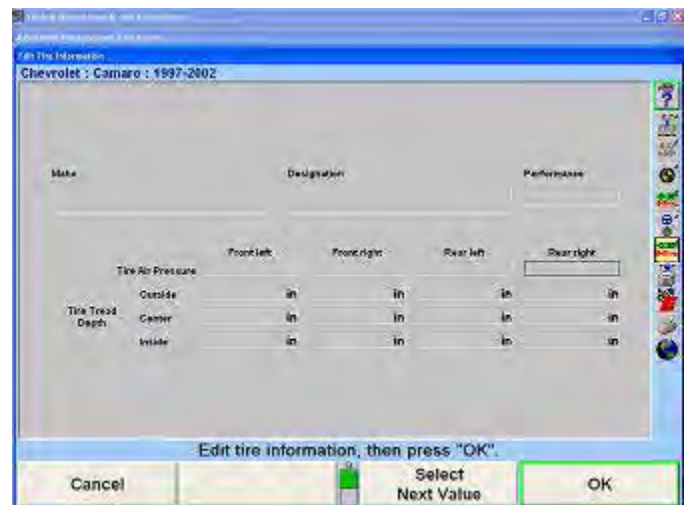




Figure 292

Use the keyboard to enter the appropriate data into the “Edit Tire Information” screen. This information will appear on the printout summary.

After the data has been entered, press “OK” to continue.

## Wheelbase and Track Width Measurements

Wheelbase and track width measurements can be used to measure the wheelbase and track width of a vehicle.

From the “Make Additional Measurements” pop-up screen, press  or  to highlight “Wheelbase and Track Width Measurements”.

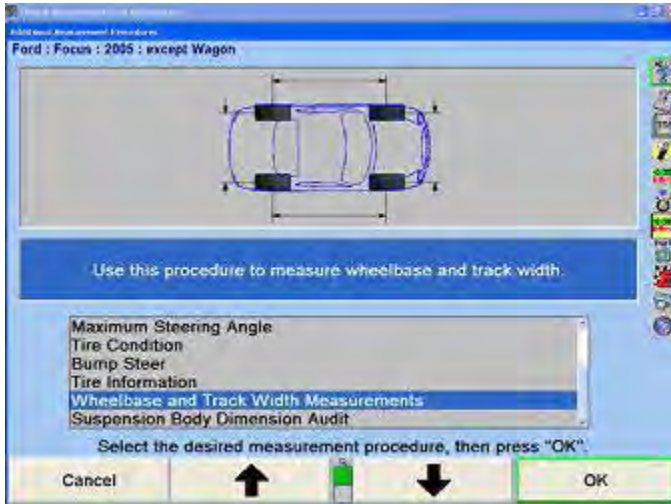


Figure 293

Select “OK”.

The “Rim Width and Adaptor Type” pop-up screen will appear.

The front and rear rim widths should be measured with a caliper and entered into the rim width data boxes. If the rim width data is left blank, the track width will be an approximate measurement taken between the outside edges of the rims.

Select the adaptor type for the sensors being used.

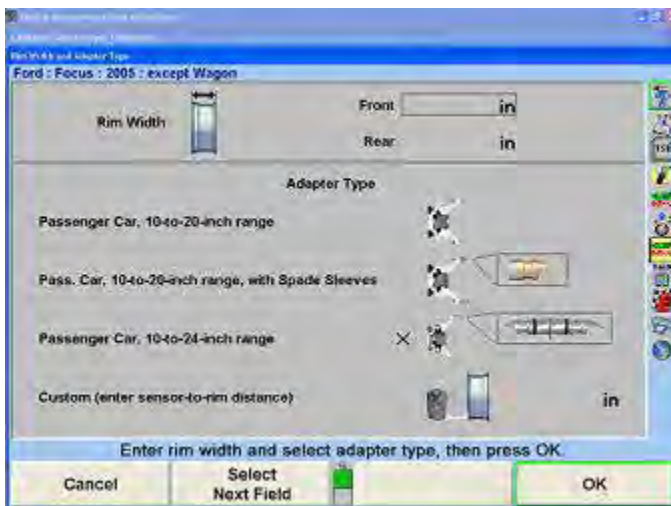


Figure 294

Select “OK”.

When the “Steer Ahead pop-up” screen appears, steer the wheels as directed.



Figure 295

Select “Ready”.

The “Wheelbase and Track Width Measurements” pop-up screen will appear, showing the wheelbase and track width of the vehicle.

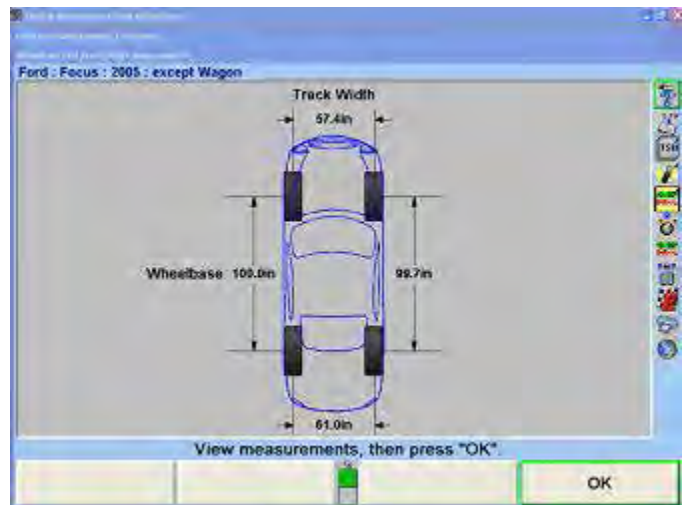



Figure 296

## SBDA - Suspension Body Dimension Audit



Suspension Body Dimension Audit (SBDA) is available only with conventional sensors equipped with the Ride Height option and body offset gauge or with DSP600 or HawkEye Targets with live Ride Height Targets.

 Improper steer-ahead, large values of runout or large values of toe can adversely affect SBDA measurements.

SBDA is a quick method of screening a vehicle to determine if it can be aligned before starting the alignment. SBDA can also be used as a quick inspection

method to detect frame damage of vehicles that have been in minor collisions and will help the technician to determine that an alignment would not bring the vehicle within specifications.

Select "Make Additional Measurements" from the "Vehicle Measurements and Adjustments" primary screen.

From the "Additional Measurement Procedures" pop-up screen, press  or  to highlight "Suspension Body Dimension Audit".

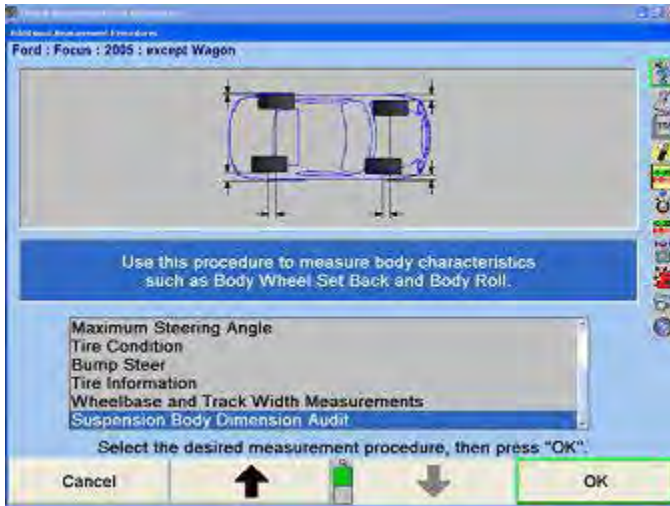


Figure 297

Select "OK".

The "Rim Width and Adaptor Type" pop-up screen will appear.

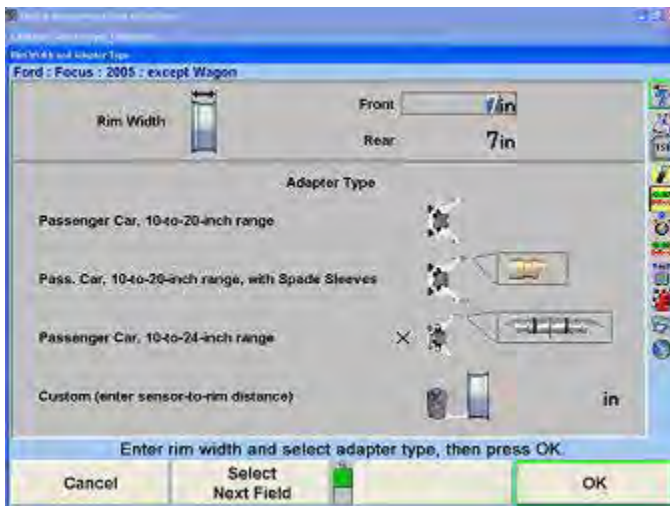


Figure 298

The front and rear rim widths should be measured with a caliper and entered into the rim width data boxes. If the rim width data is left blank, an alternate measurement called Track Width (Outside Rim) measured at the outside edges of the rims will be taken instead of Track Width.

Select the adaptor type for the sensors being used.

Select "OK".

When the "Steer Ahead" pop-up screen appears, steer the wheels as directed.



Figure 299

Select "Ready".

### Using Conventional Sensors with Ride Height Option and Body Offset Gauge

Enter the ride height dimensions using the ride height tool. Refer to "Measuring Ride Height using the Ride Height Tool."



Figure 300

After measuring ride height at a wheel, lower the ride height tool slightly, pull the Body Offset Gauge (slide scale) of the tool back slightly, then raise and extend the Body Offset Gauge so that it is making contact with the lower outside edge of the fender well.

Enter the body offset measurements manually into the body offset data boxes. Repeat this step for each wheel. The preferred measurement procedure is to measure both wheels of one axle before proceeding to the next axle.

Care should be used to take the body offset measurements with the Body Offset Gauge perpendicular to the body and at the same contact point on the body for both sides of the axle.

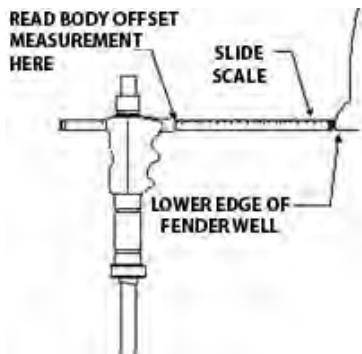


Figure 301

Select "OK".

The "Suspension Body Dimension Audit" pop-up screen will appear with the wheelbase, track width, and body angles of the vehicle and on the right shows the body wheel offset and body wheel set back of the vehicle. The positions of the wheels and the body angle are exaggerated for clarity.

Selecting "Show Vertical Measurements" will present ride height and body roll measurements with a graphical depiction of the body that may be viewed from the front and the rear axle. The amount of roll is greatly exaggerated for clarity.

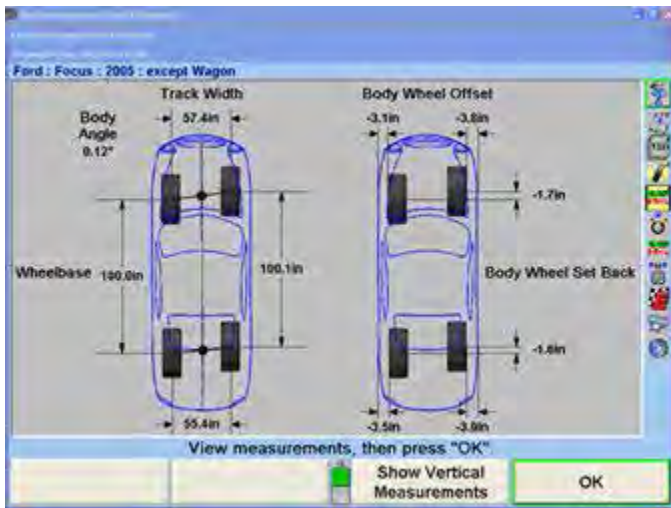



Figure 302

 All graphical measurement depictions are greatly exaggerated for clarity.

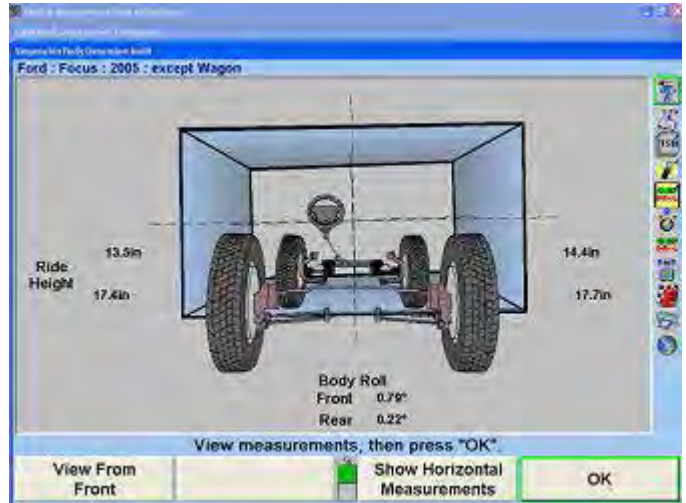


Figure 303

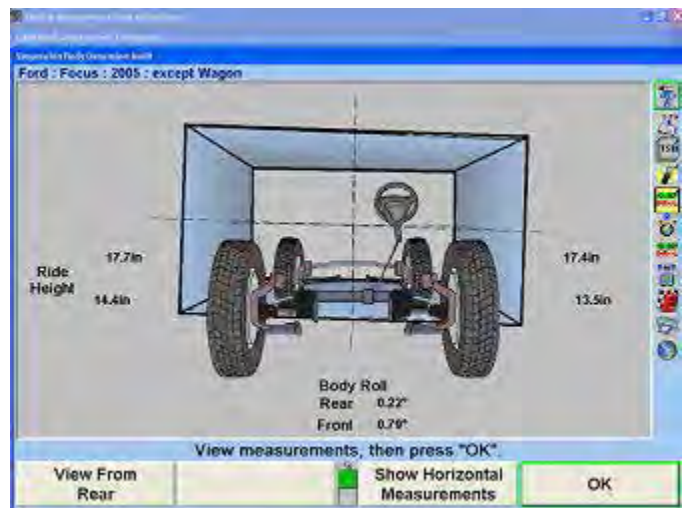


Figure 304



## Using DSP600 or HawkEye Targets with Live Ride Height Targets

Mount the Live Ride Height Targets on the vehicle. Refer to “Installing the Ride Height Targets,” on page 97 for detailed instructions.



Figure 305

After installing the Live Ride Height Targets, the measurements will be shown. Select “OK”.

The “Suspension Body Dimension Audit” pop-up screen will appear with the wheelbase, track width, and body angles of the vehicle and on the right shows the body wheel offset and body wheel set back of the vehicle. The positions of the wheels and the body angle are exaggerated for clarity.

Selecting “Show Vertical Measurements” will present ride height and body roll measurements with a graphical depiction of the body that may be viewed from the front and the rear axle. The amount of roll is greatly exaggerated for clarity.

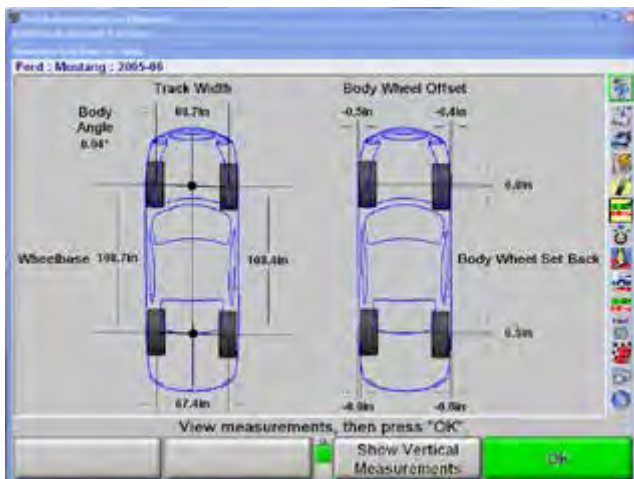


Figure 306

All graphical measurement depictions are greatly exaggerated for clarity.

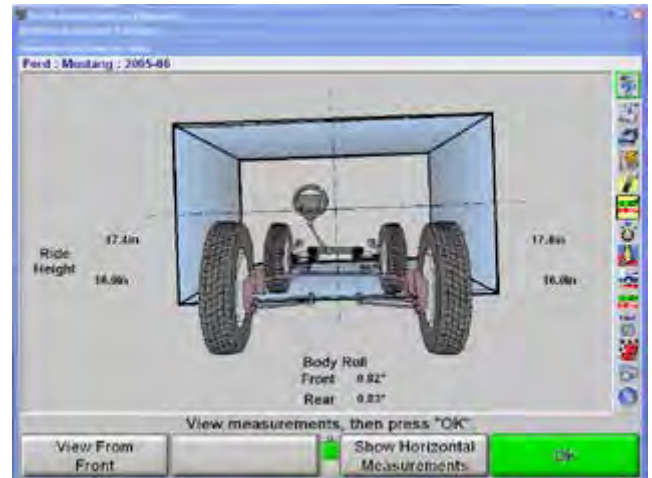


Figure 307

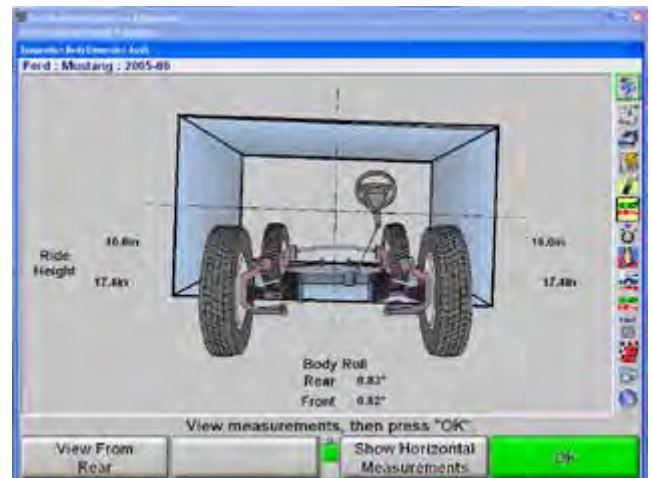


Figure 308



Figure 309

## 2.11 Illustrating Vehicle Adjustments


WinAlign® software contains illustrations for adjustments. These illustrations are drawings and photographic images of the Original Equipment Manufacturers method of adjustments. They also provide instructions or information necessary to make the adjustments.

To view illustrations:

Press “Illustrate Adjustments” on the “Vehicle Specification” primary screen or the “Vehicle Measurements and Adjustments” primary screen. The screen will change to show an adjustment illustration for the vehicle. Any additional information required for the adjustment will also be shown.

Press “Next Illustration” or “Previous Illustration” to view additional illustrations.

Viewing images in Illustrate Adjustments defaults with text callouts applied to the image.

To view the image without the overlay text, use the menu shift softkey, , to locate and press the “Hide Text” softkey. The WinAlign program will remove all text overlays for a clearer view of the vehicles image and illustration.

Pressing “Change Text Color” gives the option to view the callout text in a different color. If it is found that the text is difficult to read because of the image in the background, it is possible to change the color of the text for easier readability. The optional text colors are green (default), red, dark blue, yellow, light blue, and purple.



Printouts of the photographic images and illustrations are useful only if using a color printer.

Press “OK” after viewing illustrations. The screen will return to the primary screen where Illustrate Adjustments was pressed.


Optional multimedia video instructions provide a live audio-visual demonstration of adjustments. To view video illustrations:



Press “Illustrate Adjustments” on the “Vehicle Specifications” primary screen or the “Vehicle Measurements and Adjustments” primary screen. The screen will change to show an adjustment illustration for the vehicle.


Press “Video Adjustments”. The “Video Adjustments” pop-up screen will appear listing various videos available.



Figure 310

Press  or  to highlight the desired video, and then press “Play Selection”.

Pressing  will pause the video, and  will restart the video after it has been paused.

Pressing  will return you to the “Video Adjustments” menu screen.

After the video ends, you will be returned to the “Video Adjustments” screen.

## 2.12 Front Adjustments

WinAlign® specific front adjustment features include:

Vehicle-specific front shim adjustments

CAMM® Alignment Adjustment Feature - Control Arm Movement Monitor

WinToe® toe adjustment feature

ABC - Automatic Bushing Calculator®

### Front Shims

Press “Make Additional Adjustments” on the “Vehicle Measurements and Adjustments” primary screen. The “Additional Adjustments” pop-up screen will appear.



Press  or  to highlight “Adjust camber and caster with shims”.



Figure 311

Press “OK”. The “Adjust Front Shims” pop-up screen will appear.

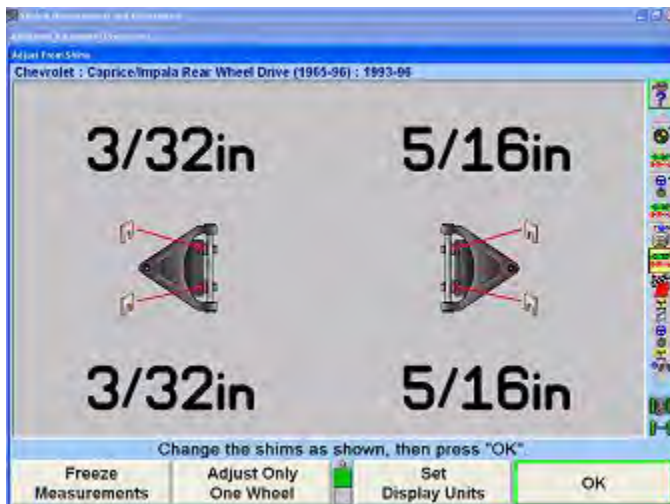



Figure 312

Some vehicles with SLA-type (short/long arm) suspensions have shims placed between the vehicle frame and the pivot arm of the upper control arm. Placing the correct amount of shims at each pivot arm mounting point simultaneously adjusts both camber and caster of the wheel. It is difficult to compute the required shim changes, especially when the upper control arm is not symmetric. The specification database includes information that allows the system to correctly compute the shim changes required, even for non-symmetric upper control arms.

 The caster angle is a live value that is continuously updated as changes occur to the caster angle during adjustment. At the beginning of the procedure, install brake depressor, then level and lock the sensors.

The procedure for making the shim adjustments is as follows:

Measure the caster, then pop-up the “Adjust Front Shims” screen.

Steer straight ahead, install brake depressor, then level and lock the sensors.

Observe the required shim changes as shown on the screen. A negative number means that the indicated shim thickness must be removed from the corresponding position, while a positive number indicates that the shim thickness must be added.

If desired, press “Freeze Measurements”.

The screen then displays “Measurements are frozen!” and freezes the required shim changes. Freezing the measurements allows the sensors to be removed from the wheels while the display continues to show the shim requirements, and to unbolt the pivot arm to change the shims without losing the display or required changes. Press “Unfreeze Measurements” to return the display to normal live operation.

Press “OK” when adjustments are complete. The “Vehicle Measurements and Adjustments” primary screen will appear.

## One-Sided Adjustments

Sometimes it is preferable to adjust camber and caster of only one wheel. For example:

If the camber and caster of one wheel are within tolerances but not exactly on specification, it may be acceptable to leave those measurements unchanged.

If the camber and caster adjustments on one wheel do not have sufficient range to allow adjustment exactly to specification, you may have to accept what adjustment is possible.

In such cases, it is important that the camber and caster adjustments be symmetric side-to-side. The system allows you to adjust camber and caster of one wheel to match the camber and caster measurements of the other wheel, thereby achieving symmetric measurements, even if those measurements are not on the specification.

Press “Adjust Only One Wheel”. The “Snapshot One-Sided Adjustments” pop-up screen will appear, as shown below.




Figure 313

If you wish to adjust the left wheel and leave the right wheel unadjusted, press “Adjust Only The Left Wheel”.

OR

If you wish to adjust the right wheel and leave the left wheel unadjusted, press “Adjust Only The Right Wheel”.


 You can adjust one wheel to its optimum adjustment, then press “Adjust Only One Side” to optimize the other wheel.

When the camber and caster measurements are stable on the wheel that will remain unadjusted, the system will save those measurements to be used as the targets for



adjusting the other wheel. The “Adjust Front Shims” pop-up screen will appear.

The prompt will instruct you to change the shims only on the wheel to be adjusted. The shim changes shown for the wheel are the adjustments required to make the camber and caster of that wheel match the camber and caster of the other wheel.

To return to adjusting both wheels, press “Adjust Both Wheels”.

 You may Freeze Measurements either before or after pressing “Adjust Only One Wheel”.

## CAMM® Alignment Adjustment Feature - Control Arm Movement Monitor for Front Cams and Slots

Press “Make Additional Adjustments” on the “Vehicle Measurements and Adjustments” primary screen. The “Additional Adjustment Procedures” pop-up screen will appear, as shown below. Press  or  to highlight the adjustment procedure for cams or slots.

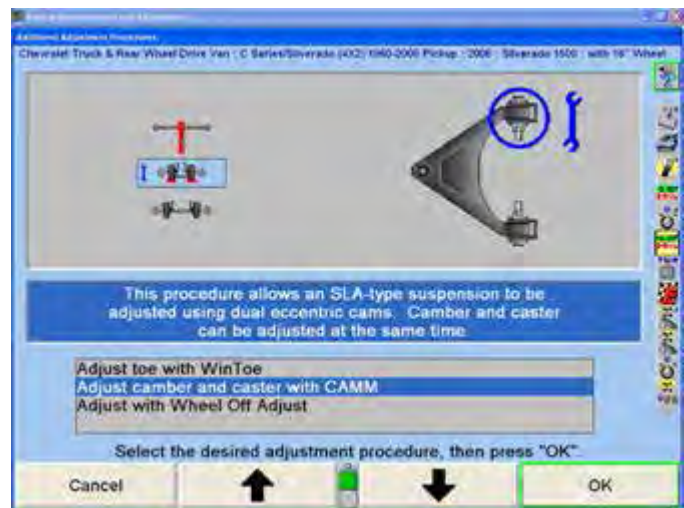


Figure 314

CAMM® Alignment Adjustment Feature is also available as a drop-down selection from the measurements screen, or as part of the ExpressAlign® procedure.



Figure 315



Figure 316

The "Adjust Front Cams and Slots" pop-up screen will appear, as shown below. If ExpressAlign® has been enabled the screen will appear automatically.



Figure 317

Press "Jack Up Front Wheels" to adjust with the wheels off the rack. The "Axle Jacking Procedure" pop-up screen will appear.

Raise the selected axle and press "Ready". The program will compensate for the difference in sensor readings caused by raising the wheels.

OR

Press "Adjust On Turnplates" to make adjustments without raising the vehicle.

The "Adjust Front Cams and Slots" pop-up screen will appear, as shown below. CAMM will determine the cam or slot that should be adjusted first (front or rear).

Caster and camber bar graphs can also be displayed by selecting "Show Bar Graphs". The bar graphs should be used for reference only. Actual adjustments should be made using the blue CAMM bar graphs.

When adjustments have begun, an arrow appears indicating the direction the control arm is being moved. A green arrow will point toward the center of the graph if adjustments are being made correctly, or a red arrow will appear if adjustments are moving away from the center of the graph.

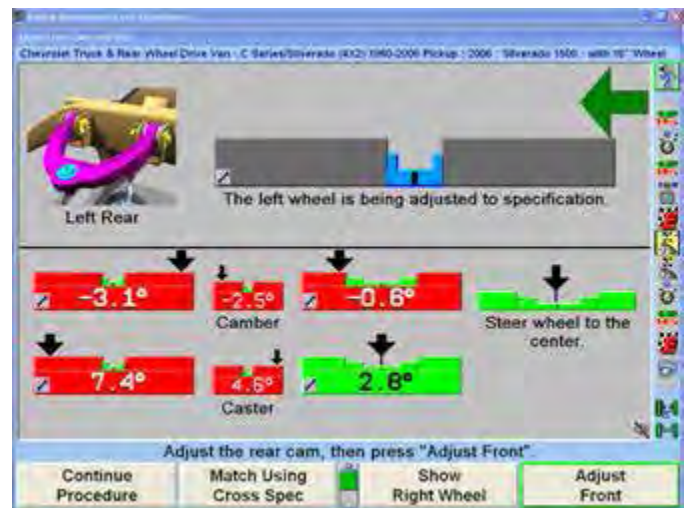


Figure 318

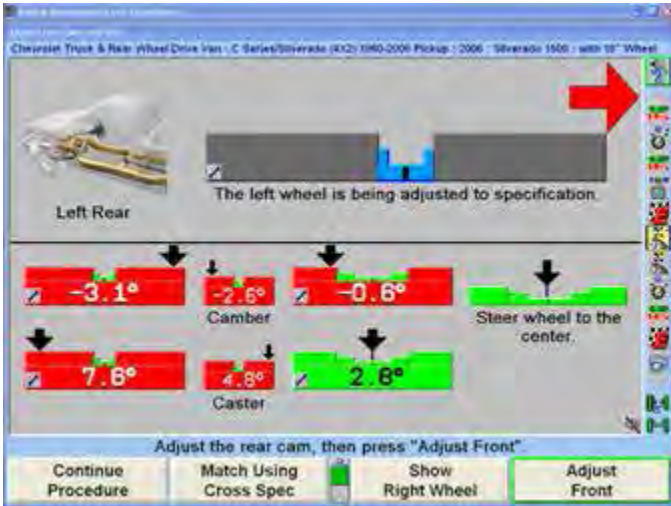


Figure 319

Adjust the front cam or slot until the arrow is in the center of the bar graph. As the adjustments are made the indicator will move to the center of the bar graph and the bar graph will turn from gray to blue.

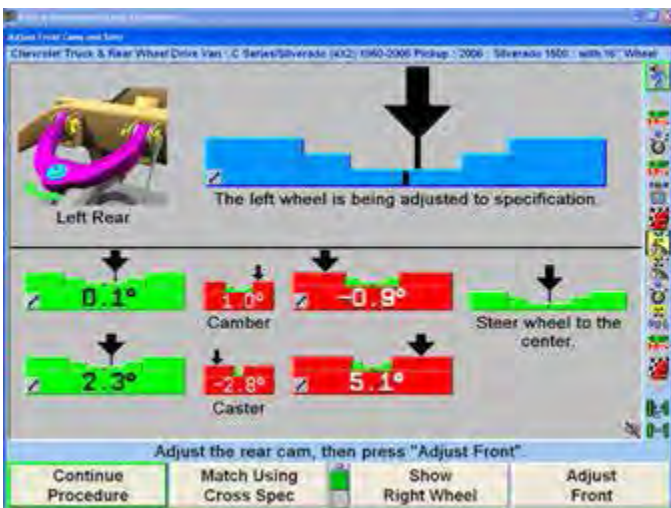


Figure 320

In the example above the rear cam is adjusted first. When the bar graph has turned blue, tighten the cam, then select "Adjust Front" to adjust the front cam. Each time the aligner will re-analyze the changes required before switching to the other cam or slot and showing the bar graph.

Continue making adjustments as directed. When the adjustment has moved camber and caster to within specs for that particular wheel a pop-up screen notifying the technician that no more adjustments are required will appear.

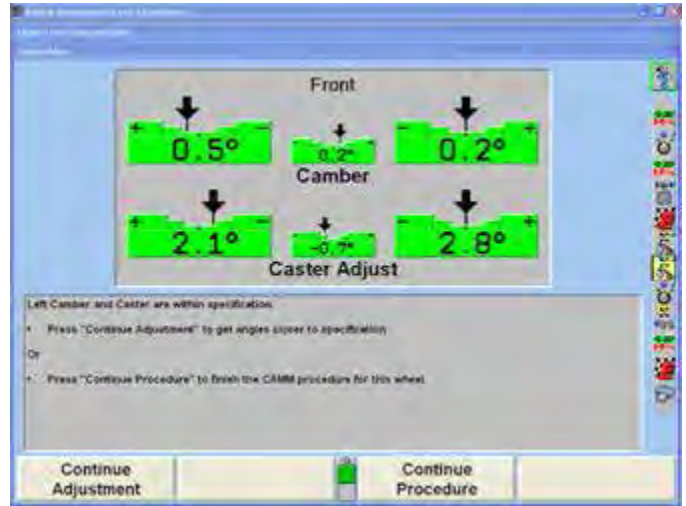


Figure 321

Select "Continue Procedure" to move on to the next step in the alignment procedure. If the other wheel still requires adjustment the program will automatically switch to that wheel. Make the adjustments to that wheel as directed above.

If at any time the steering wheel is moved away from center, a bar graph will appear with the steering wheels current position and the note Steer wheel to the center. Correct the steering condition and continue with the procedure.



Figure 322

Select "Match Using Cross Spec" to have CAMM add the correct amount of difference the vehicle manufacturer recommends. An example of this would be:

Caster spec left: 4.0 degrees

Caster spec right: 5.0 degrees


Actual Left Caster: 3.7

Actual Right Caster: 1.2

If the technician is adjusting the right side of the vehicle using Match Using Cross Spec, right caster will be adjusted to 4.7 degrees. If the left and right spec for camber or caster is different, it will add or subtract the correct amount. If there is not a difference, it will match them exactly.

Select "Lower Wheels and Finish" when all adjustments are completed.

### WinToe® Toe Adjustment System



WinAlign® 10.0 and greater allow more steering and lift range when using WinToe®.



WinToe® Toe Adjustment System is a software feature that allows the adjustment of front toe on vehicles with an independent tie rod adjustment for each wheel. Using WinToe will provide the desired toe settings for each wheel and insure the desired steering wheel position, normally without the need to readjust or touch up settings. Additionally, WinToe eliminates the need to lock the steering wheel during toe adjustments.

There are a few special cases in which a different WinToe procedure will be used to adjust front toe:

- Vehicles with single tie rod and no adjustable draglink
- Vehicles with relay rod and adjustable draglink

To access WinToe directly from the front bar graphs, press and hold the left mouse button on either the left or right toe bar graph, then highlight "Adjust Toe with WinToe" from the pull-down menu and release.

OR

Press  or  to highlight "Adjust Toe with WinToe" under the "Make Additional Adjustments" secondary screen. The "WinToe" pop-up screen will appear prompting to level the steering wheel in the straight-ahead position as indicated.

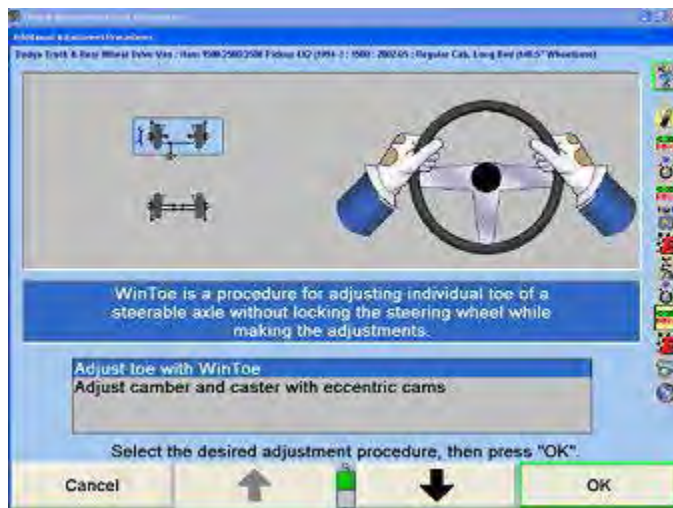


Figure 323

For vehicles with power steering, place the transmission in park or neutral, install brake depressor, and make sure the wheels are chocked, start the engine and level the steering wheel.

Steering wheel leveling is important. While sitting in the drivers' seat, rock the steering wheel back and forth in arcs left and right from the level position. The arcing motion should start out with larger arcs and gradually become smaller arcs with the result being to have the steering wheel be precisely leveled while ensuring that the steering system is carefully positioned in the mid-point of any gear lash and power steering valve movement.

Use chalk to mark the leveled steering wheel position with the side of the steering column. This easy to see reference mark will save time in final adjustment verification.



Figure 324

Select "Show Toe Bar Graphs" to exit the VirtualView® WinToe®.

With the steering wheel centered, turn the engine off and exit the vehicle, being careful to not touch or bump the wheel position. IT IS NOT NECESSARY TO LOCK THE STEERING WHEEL. (Does not apply to the two special cases in which a different WinToe procedure will be used to adjust front toe.)

While being careful to not disturb the position of any wheels or steering linkage, level and lock all four wheel sensors.

**i** Before locking the adjustment, lightly jounce the front end to verify the relaxed position. Lock the adjustment and lightly re-jounce the suspension to verify adjustment. As long as the bar graph remains green, with the adjustment locked, you can proceed. The value does not have to read zero. To prevent incorrect adjustments, WinToe does not allow the operator to proceed unless the locked adjustment is green.

Follow the on-screen instructions and press "Ready".

This will allow WinToe to memorize each front wheels position and needed tie rod adjustments relative to the desired steering wheel position. Keep in mind, the WinToe feature's memory will track the needed adjustments for each wheel, even if the steering moves or gets jarred during the adjustment process. WinToe automatically compensates for any movement in the steering system and continues to accurately monitor the adjustments.

The screen will change to display a bar graph prompting to adjust the right toe.



Figure 325

Adjust right tie rod until toe is zero. Jounce the front axle. Readjust the right tie rod if necessary. Equalize all rotational movement in the joints by making sure that each ball and socket joint in the steering linkage can be rotated in either direction the same distance.

Lock the adjustment, then lightly jounce the front end again to verify the adjustment. As long as the bar graph remains green, with the adjustment locked, you may proceed. The value does not have to read zero, but the bar graph must be green.

**i** To prevent incorrect adjustments, WinToe prevents the operator to proceed unless the locked adjustment is green.



Figure 326

After the right side adjustment is completed and locked, pressing "Ready" will display a bar graph prompting to adjust the left toe.



Figure 327

Adjust left tie rod until toe is zero. Jounce the front axle. Readjust the left tie rod if necessary.

Equalize all rotational movement in the joints.

Lock the adjustment, and then lightly jounce the front end again to verify the adjustment. As long as the bar graph remains green with the adjustment locked, you may proceed. The value does not have to read zero, however, the bar graph must be green.



## WayOut WinToe® Procedure



When performing the WayOut WinToe® procedure, it is important to:

Select “Steer Before Adjusting” (K2) on the second screen.

Install the steering wheel holder when instructed.

Start the WinToe® procedure.

Select “Ready.”



Figure 328

Press “Ready”. The screen will change to display one bar graph.

To verify steering wheel position, steer straight ahead. The arrow should be centered on the bar graph and the steering wheel level. Restart WinToe if the steering wheel is not level.



Figure 329



For vehicles with power steering, start the engine, and with a slight rocking motion of the steering wheel, steer the arrow on the bar graph to the center. Observe the final steering wheel position.



You may also use the reference chalk marks, if used earlier, to index the level steering wheel position. After verification of steering wheel position, the on-screen instructions will prompt you to press “Ready”. This will complete the WinToe procedure by returning to the primary “Vehicle Measurements and Adjustments” screen.



Figure 330

From the WinToe Step 2 screen, select “Steer Before Adjusting.”



Figure 331

Screen will change and prompt you to steer the vehicle to the preferred adjustment location. Lock and level the steering wheel and the press “Ready.”



Figure 332

Screen will change back to the Step 2 screen. Follow onscreen instructions and select “Ready.”

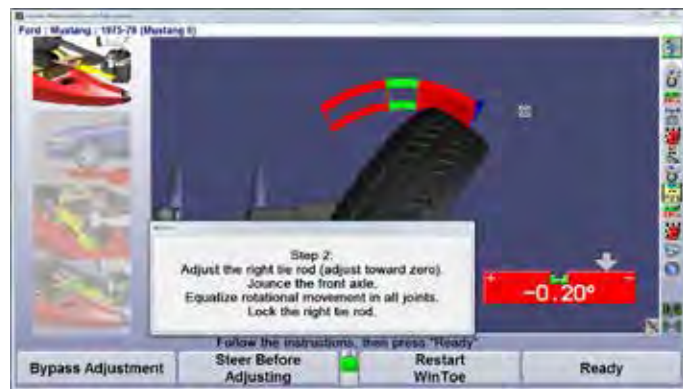


Figure 333

Screen will change and prompt you to steer the vehicle to the preferred adjustment location. Lock and level the steering wheel and the press “Ready.”



Figure 334

Screen will change to the Step 3 screen. Follow onscreen instructions and select “Ready.”



Figure 335

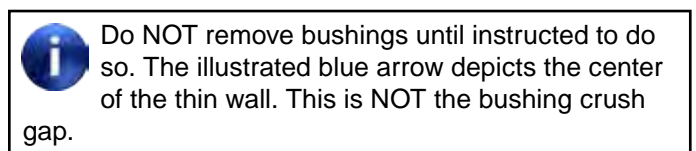
Screen will change to the Step 4 screen. Follow onscreen instructions and select “Ready.”





Figure 336

### **ABC - Automatic Bushing Calculator® Adjustment Feature**

Automatic Bushing Calculator® (ABC) provides assistance in determining the correct bushing size and proper positioning for the required adjustments.



Press “Make Additional Adjustments”, on the “Vehicle Measurements and Adjustments” primary screen.

The “Additional Adjustment Procedures” pop-up screen will appear. Press  or  to highlight “Adjust camber/caster with bushings”.

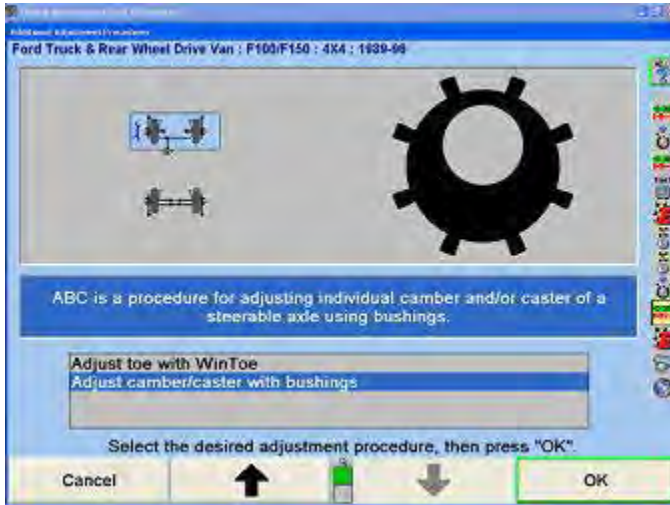


Figure 337

Press “OK”.

OR

Select “Adjust with Automatic Bushing Calculator” from the context sensitive menu.


In the left lower corner of each applicable bar graph, there will be a bushing icon, , to indicate that the Automatic Bushing Calculator is available.



Figure 338

If the “Steer Ahead” pop-up screen appears, steer the wheels straight ahead.



Figure 339

Press “Ready”. Measurements will automatically be frozen.

Do not remove the bushing.

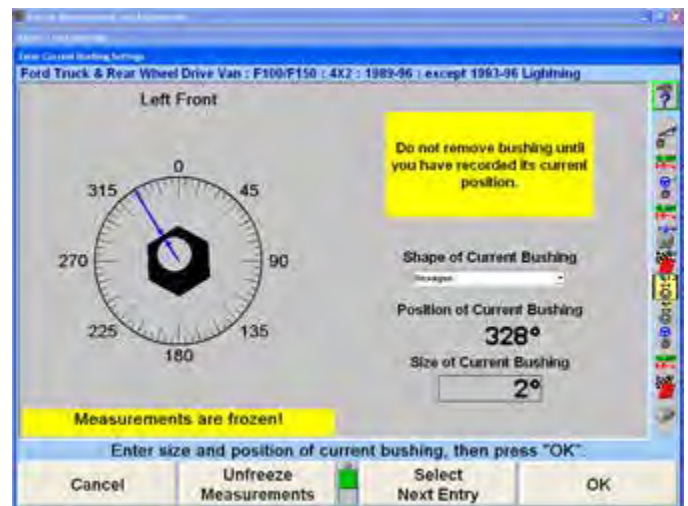





Figure 340

The screen then displays “Measurements are frozen!”. Freezing the measurements allows the sensors to be removed from the wheels while the display continues to show the bushing requirements. Press “Unfreeze Measurements” to return the display to normal live operation.

Identify and enter the shape of the current bushing by pressing the tab key on the keyboard and  or  to highlight the desired choice or using the mouse or lightpen.

Record the current position of the bushing into the computer.


 The illustrated blue arrow depicts the center of the thin wall. This is NOT the bushing crush gap.

Adjust the blue arrow to the center of the thin wall on the illustrated bushing.

OR

Enter the data manually by pressing the tab key on the keyboard to highlight the "Position of Current Bushing" data box and entering the degrees using the illustrated bushing as a reference for direction.

Identify the size of the current bushing by looking at the stamped size on the side of the bushing and enter the size into the "Size of Current Bushing" data box.

 ABC accepts bushing size values in both decimal degrees and fractional degrees. If the bushing is stamped in degrees and minutes (example 1°30), you should convert the value to degrees before you enter it.

DEGREES AND MINUTES =	DEGREES
0°15	.25°
0°30	.50°
0°45	.75°
1°00	1.00°
1°15	1.25°
1°30	1.50°
1°45	1.75°
2°00	2.00°

After you have finished entering the existing bushing information, press "OK".

The "Adjust Front Bushings" pop-up screen will appear. The screen opens showing the bushing requirements for the left wheel. Press "Show Right Bushing" to toggle to the right wheel, and then "Show Left Bushing" to toggle back.

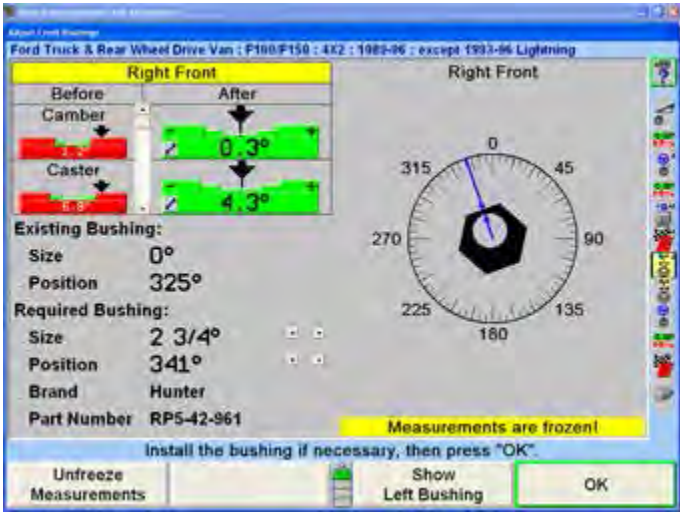


Figure 341

Before removing the bushing, mark a reference line on the bushing that indicates the front orientation of the bushing in its current position. Remove the bushing.

This screen will display the existing bushing information and the required adjustment bushing information. The currently measured camber and caster are shown in the Before column at the upper left.

The After column shows the residual errors that will remain in camber and caster after installing the bushing. These residual values are shown in bar graph form so that the quality of the adjustments can be quickly gauged.

The size, installation position, brand and part number for the required bushing will be displayed in the lower left-hand corner of the screen.

The size and position of the required bushing are computed for optimum adjustment, but may be manually overridden by the technician by either selecting the adjustment arrows to the right of the numbers, or by moving the blue arrow to the new placement of the thin wall of the bushing.

Initially the computer considers both readings to have equal importance, but the scroll bar to the right of the camber and caster readings allows the technician to prioritize the need for either camber or caster adjustment as more or less important. "Improve Camber" and "Improve Caster" can also be selected to move the scroll bar. For instance, scrolling toward caster increases the importance of caster adjustment and decreases the importance of the camber adjustment. The bushing will be changed accordingly.

Selecting "Change Bushing Brand" will change the bushing manufacturer to the next manufacturer available.

Selecting “Print Bushing and Template” will print the template of the bushing that can be helpful in placement of the bushing. The bushing is shown in the actual size so that the display may be used as a template.

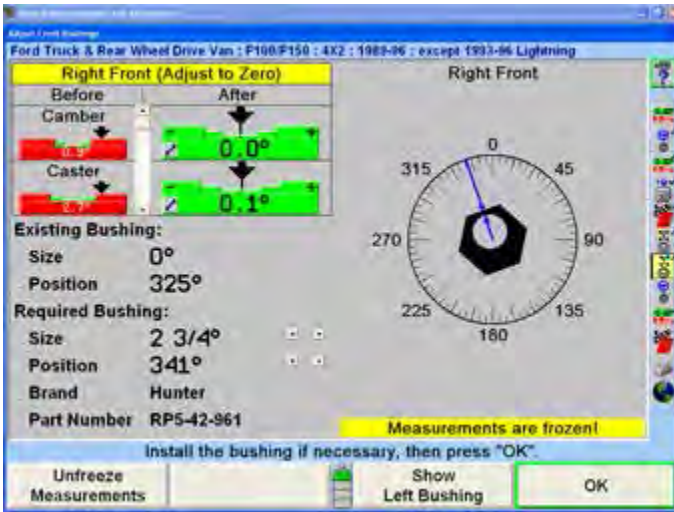


Figure 342



Selecting “Select Bushing Brand” will present the technician with a list of bushing brands. The desired manufacturer can be selected by pressing  or  to highlight the manufacturer and selecting “OK”.



Figure 343

When used with ExpressAlign® the Alignment Bushing Calculator allows for one wheel to be adjusted when the opposite wheel is within specification. When this situation occurs, the pop-up screen will provide you with a list

of options that will allow you to select “Adjust Only One Wheel”, “Adjust Both Wheels”, or “Adjust to Actual Value”.



Figure 344

Selecting “Adjust Only One Wheel” when the left wheel is out of specification will set the specification for the left wheel to right value + cross spec. If the right side were out of specification, then right wheel would be set to left value - cross spec.

To adjust both wheels using ABC with ExpressAlign:

Adjust the left wheel first. After adjusting the left wheel, press “OK”. WinAlign will display the steer ahead screen again. This time, **K3** will read “Use Frozen Measurements”.

Press “Use Frozen Measurements” to bypass the steer ahead screen and use the previously frozen measurements. This prevents the user from having to re-mount the wheel and sensors, lower and jounce the vehicle, re-compensate the sensors, and steer ahead to re-freeze the measurements.

When all adjustments are completed, press “OK” to return to the “Vehicle Measurements and Adjustments” primary screen. After adjusting camber and/or caster using ABC, lower and jounce the vehicle, then re-compensate the sensors.

## 2.13 Printing

Access the print selections from the “Vehicle Specifications” or the “Vehicle Measurements and Adjustments” primary screens. This screen will also be available at the end of the alignment process.

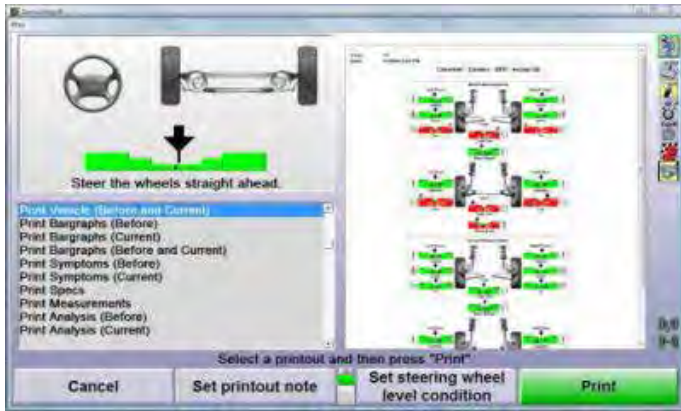


Figure 345

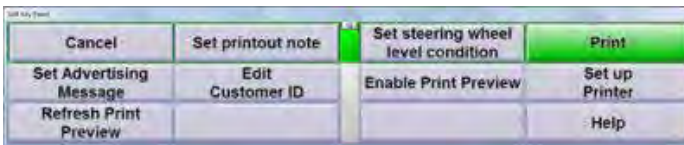


Figure 346

WinAlign will remember the printout selected on the last alignment and automatically select the same printout for future alignments.

Selecting a printout in the selection box on the lower left portion of the screen will show a preview of that printout on the screen. When “Print” is selected WinAlign will send the printout to the printer.

### Set Printout Note

A note can be added to the printout by pressing “Set Printout Note” and typing in the text box provided below the print preview.

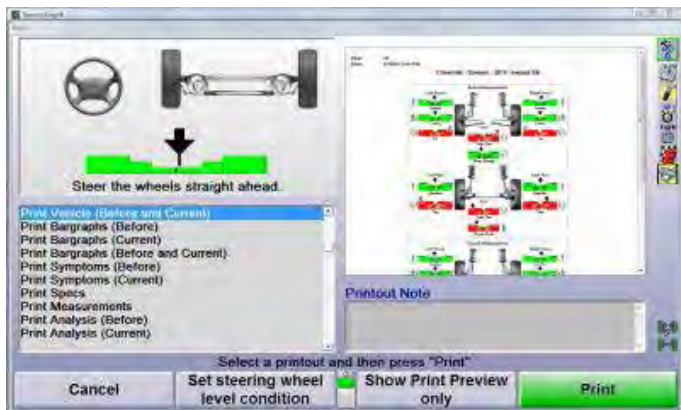


Figure 347

### Set Steering Wheel Level Condition

Graphic and text information about the steering wheel level condition can be added to the printout by selecting “Set Steering Wheel Level Condition.” Select the current status of the steering wheel from the selections provided below the print preview.

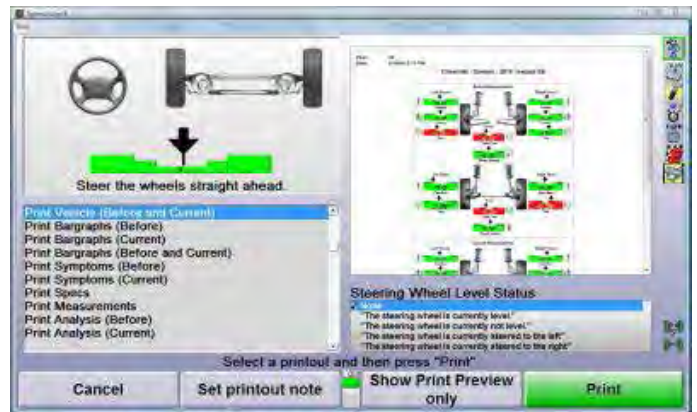


Figure 348

## 2.14 CodeLink™ Device

WinAlign® 11.0 and later supports CodeLink™ which can be used to complete procedures required by the OEM during the alignment, such as resetting the steering angle sensor.

For a list of supported manufacturers and vehicles please refer to Form 6066-T.



WinAlign® 14.0 & later supports using the remote control key pad on the CodeLink™ device for the entire alignment procedure. Older versions will only function while the user is on CodeLink™ screens. The device will not function as a remote control in other screens.

### Setup Options

There is an option to enable CodeLink throughout regular alignments and an option perform a pre-alignment DTC check. The options are available from the “Common Alignment Preferences” setup menu.

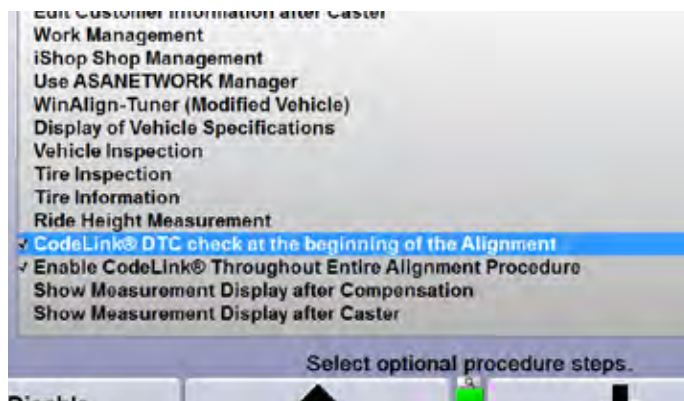


Figure 349

When CodeLink is enabled through the entire alignment, the keypad will function for entering data and navigating through screens using the K-buttons.

When “CodeLink DTC check at the beginning of the alignment” is enabled, an additional step will be added to pull DTC’s from the vehicle before starting the alignment.

## Using CodeLink During Alignments

If the scan is unsuccessful, a screen will appear with possible issues that may be causing the failure.

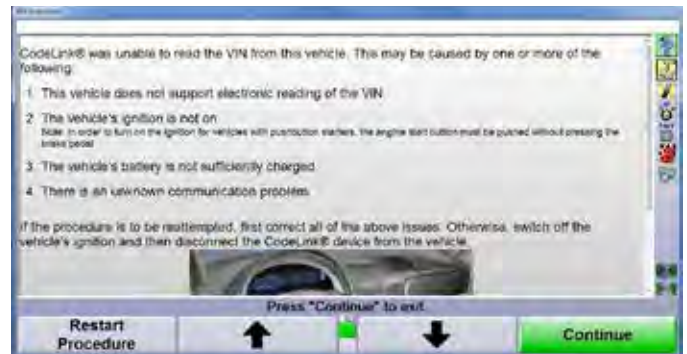



Figure 350

### Checking ESC Related Diagnostic Trouble Codes Before Alignment

This procedure is a simple check to determine if there are any pre-existing DTC’s set. You may choose to read DTC’s at this time, however it is not required as part of the procedure. However, most manufacturers do require that any pre-existing faults be corrected before continuing.

When a CodeLink™ supported vehicle is selected the CodeLink™ icon, , will appear in the Alignment Procedure Bar.

Also, a screen advising the user that the vehicle they are aligning will require CodeLink™ interaction will also appear.

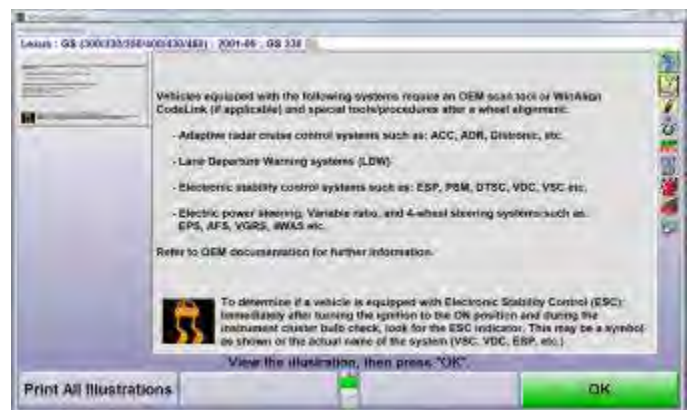


Figure 351

CodeLink will pull DTCs from the vehicle before the start of the alignment. Follow the on-screen instructions, then select “Continue” to begin communicating with the vehicle.

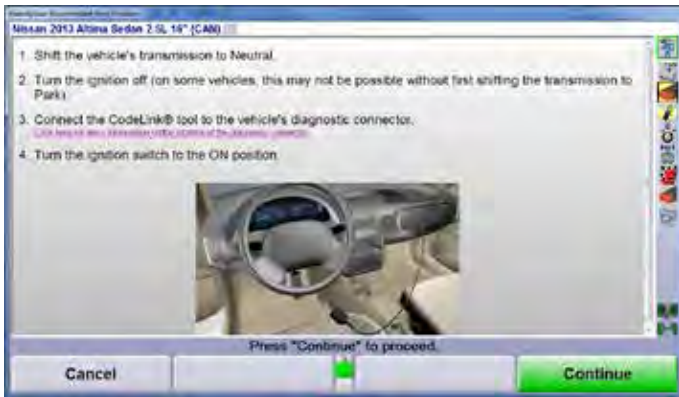


Figure 352

Faults in systems related to the procedure will be displayed. The “Re-Read DTCs” soft key will re-read DTC’s from the related systems. The “Clear DTCs” soft key will clear DTC’s from the related systems.

Press “Continue”.



Any error codes present in the related systems will be cleared when the procedure is performed at the end of the alignment.

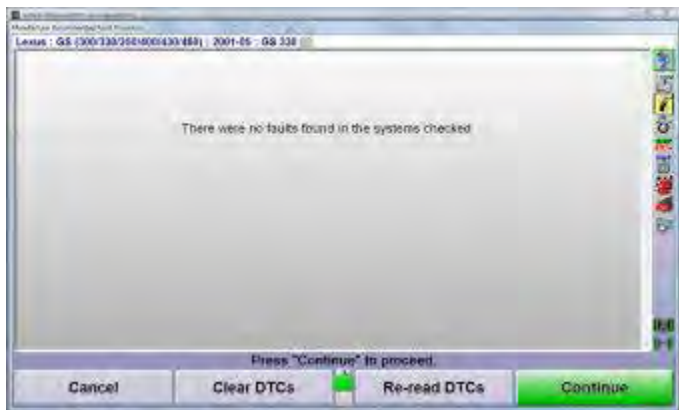



Figure 353

Continue the alignment as directed by WinAlign®.

### Performing the CodeLink Procedure

When a CodeLink™ supported vehicle is selected the CodeLink™ icon, , will appear in the Alignment Procedure Bar. A screen advising the user that the vehicle they are aligning will require CodeLink™ interaction.

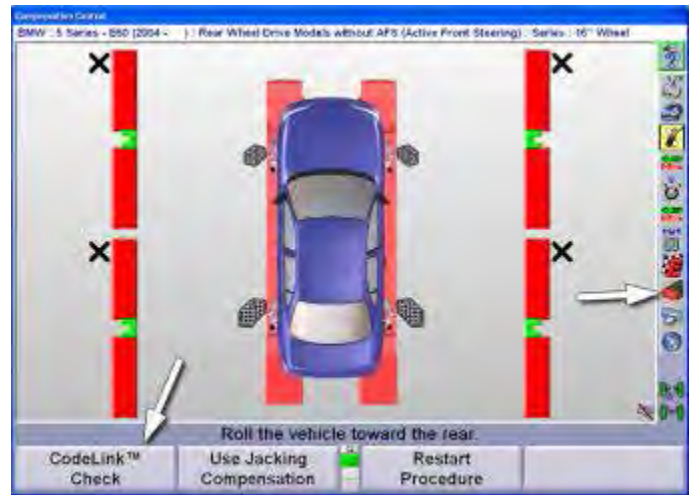


Figure 354



When using the CodeLink™ device it is very important to follow the on-screen instructions precisely and in order they are displayed.

After all adjustments have been made and checked with ExpressAlign®, WinAlign® will prompt to perform the CodeLink™ procedure. Select “Reset Stability Control System.”



Figure 355

Follow the instructions on the screen precisely and in order. Press “Continue”, WinAlign® and the CodeLink™ device will only communicate with the vehicle after “Continue” is pressed.





Figure 356



Figure 357

The “Manufacturer Recommended Reset Procedure” screen will appear. Follow the instructions on the screen precisely and in order. Press “Continue” when ready.

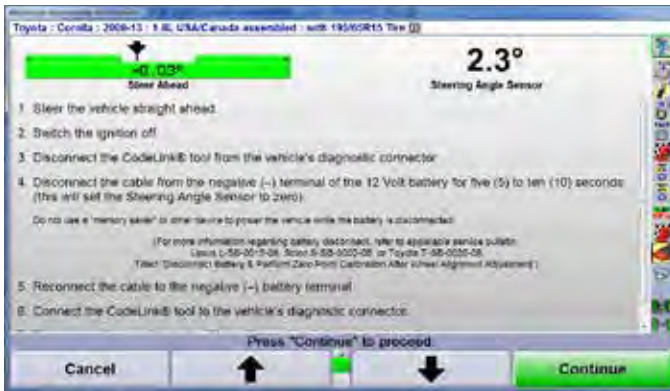


Figure 358

WinAlign and the CodeLink™ device will communicate with the vehicle again.



Figure 359

There may be multiple screens shown with additional instructions. Follow the instructions on the screen precisely and in order. Press “Continue” when ready for each screen.



Figure 360

Some vehicles may display a screen after reset indicating that the steering angle has been reset (indicated by the “Steering Wheel Sensor” value on the right of the screen below). This closing screen may also have instructions for items that may need to be carried out upon completion. Be sure to print or take note of these instructions if they appear. Follow the instructions on the screen precisely and in order.

Press "Continue."



Figure 361

When all procedures are complete WinAlign® will prompt the user to remove the CodeLink™ device from the vehicle. Follow the instructions on the screen precisely and in order.

Select "Print CodeLink® Report" if a detailed CodeLink Report is desired.



Figure 362

Press "Continue" when ready.



Figure 363

Finish the alignment as directed by WinAlign®.

# 3. Quick Check® using the Aligner Procedures

## 3.1 Quick Check using the Aligner Overview

For WinAlign® version 14.3 or greater with the addition of a plus key, the alignment console can also preform Quick Check procedures. If the appropriate accessories are also available, the following enhanced Quick Check procedures can be done:

- Tire Health
- Battery Health
- Diagnostic Systems Check
- Quick Tread® Tread Depth System

### Quick Check and Accessories Setup

The “Begin Quick Check” option must be active to setup any optional accessories. To do this, in the setup menu, select “Enable Quick Check™ Key on the Logo Screen” under the “Aligner Equipment” heading.

Press “Set Up Selected Item”, and enable the key. The begin Quick Check key will appear on the logo screen.



Figure 364

Any optional accessories must first be enabled in order to have them available during the Quick Check process. To do this, go to setup. The screen will ask which setting to view. Select the K3 Quick Check key.



Figure 365

Once within the Quick Check setup screen, select "Optional Equipment" under the "Sensors" heading.

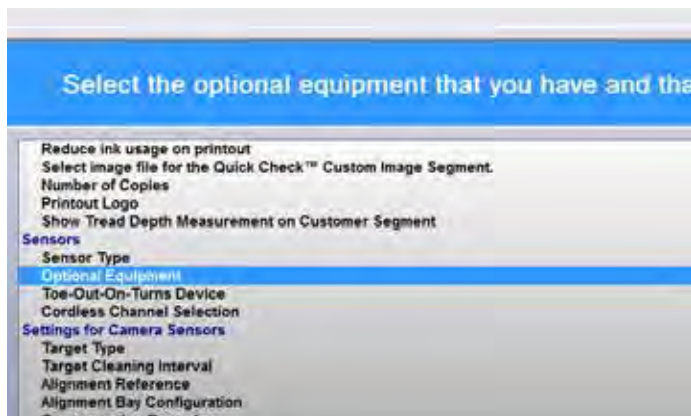


Figure 366

Select any equipment to be enabled. A checkmark will appear next to any item that is enabled.



Figure 367

### Quick Check for Long Wheelbase Vehicles

When using Hx421 DU targets, there is an option to measure the front axle only if the rear targets are out of the view of the cameras.

Enable "Option during compensation to measure front axle only" in the Setup screen.

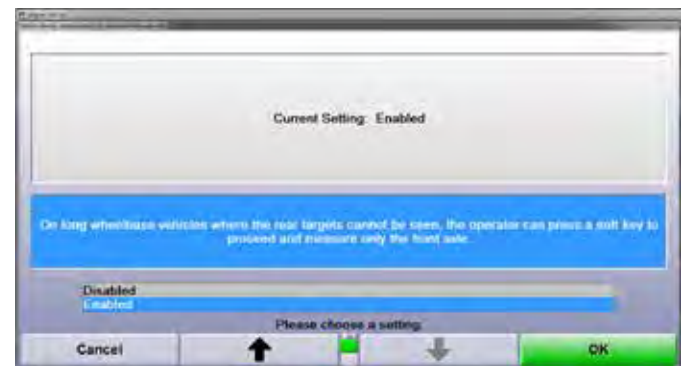


Figure 368

When this option is enabled a new softkey will appear on the compensation screen if no rear targets are detected by the cameras.

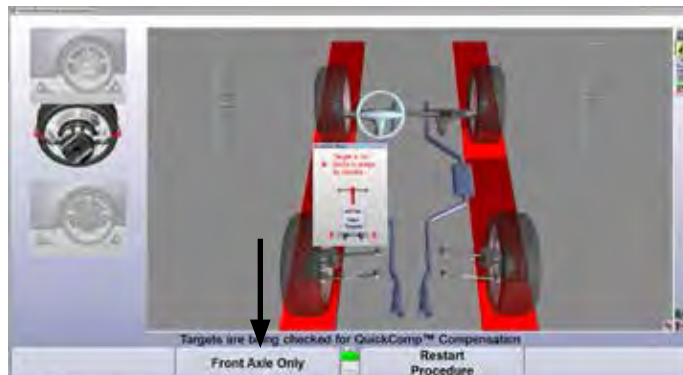


Figure 369

Select the "Front Axle Only" softkey on the compensation screen to allow compensation to continue even if the rear targets are out of the field of view.

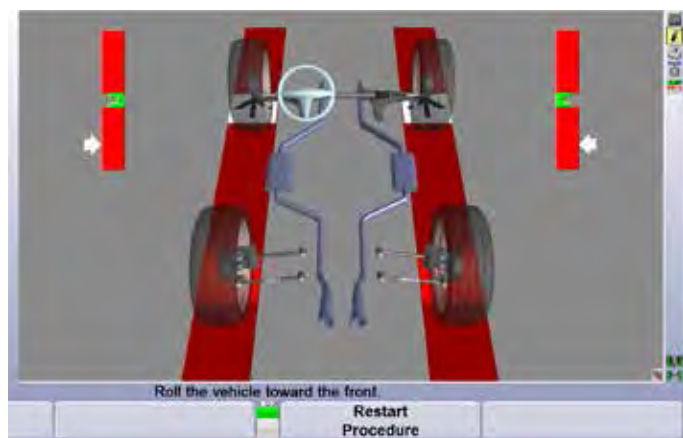


Figure 370

The Quick Check printout will show information for three alignment angles: front total toe, right front camber and left front camber, information for the rear axle will be grayed out.

Ford : F100/F150 : 4X2 : 2007-08 :  
SuperCrew

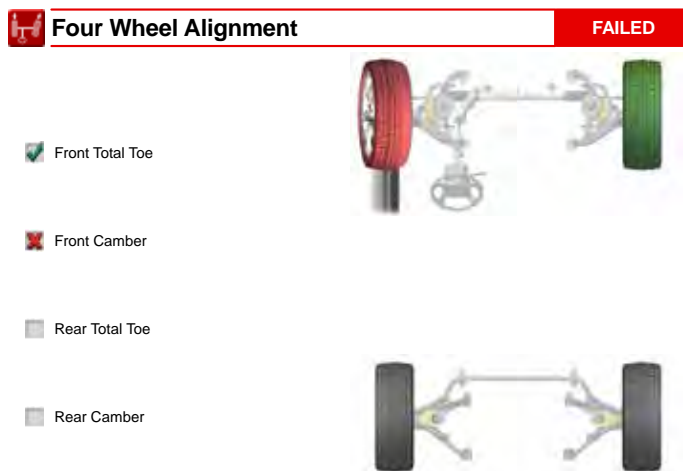


Figure 371

## Standard Compensation Option

WinAlign 14.3 and greater supports the use of a standard (roll back then forward) compensation procedure. This feature is most useful in situations where a single aligner console is used for Quick Checks and alignments. It eliminates the need to change the position of the targets on the Quick Grip adaptors when switching back and forth from alignment to Quick Check.

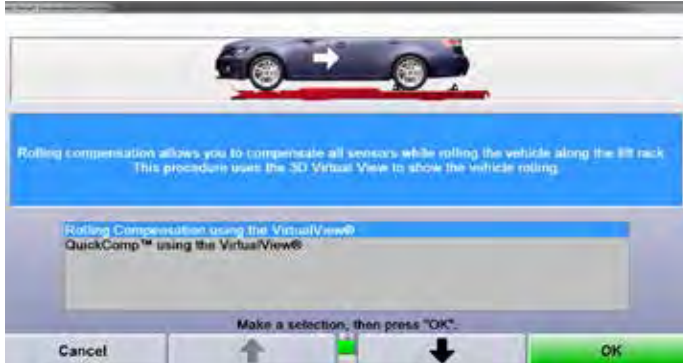


Figure 372

## ***Tread Depth Setup***

Due to the wide range of tire sizes and tread depths, the following specifications are generalized to fit the majority of tires. Specifications may need to be adjusted to fit the needs of each shop.

In the Setup menu, select "Define Tread Depth Specification" under the "Tread Depth" heading.

The general "new" tread depth is 12/32 (.375) inches. This number will appear green on a printout. This can be modified to fit the individual situation of each shop based on what types of wheels normally are checked.



Figure 373

The general "marginal" minimum tread depth is 4/32 (.125) inches. When a tread depth measurement reaches

this range the printout color will change from green to yellow.



Figure 374

The general "failed" minimum tread depth is 2/32 (.0625) inches. When a tread depth measurement reaches this range the printout color will be shown as red.



Figure 375

The number of tread depth measurement points per tire can be specified in setup as well. Select "Number of Measurements Per Tire" under the "Tread Depth" heading.



This option only applies to Handheld Tread Depth units.

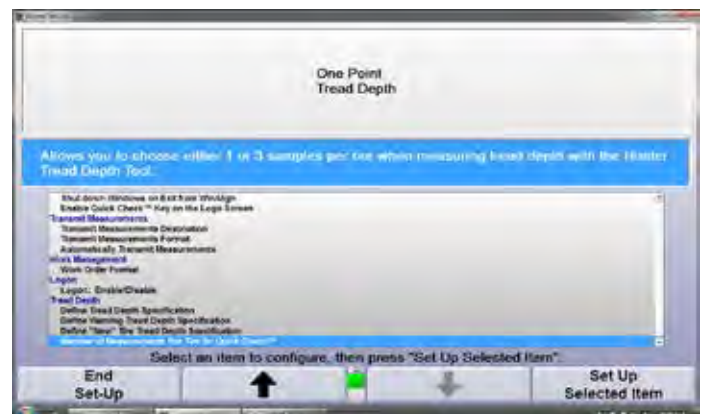


Figure 376

Select One Point or Three Point and select “OK”.

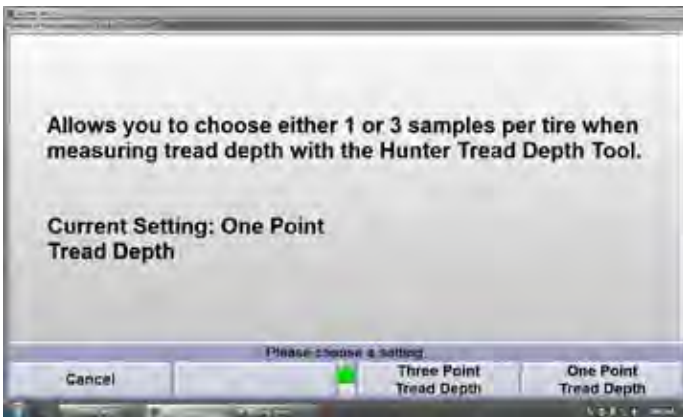


Figure 377

Tread depth measurement can be displayed in a number of formats including decimal and fraction. To change the display type, select “Alignment Measurement Units and Formats” under the “Alignment Procedure” heading. Select “Set Up Selected Item”.

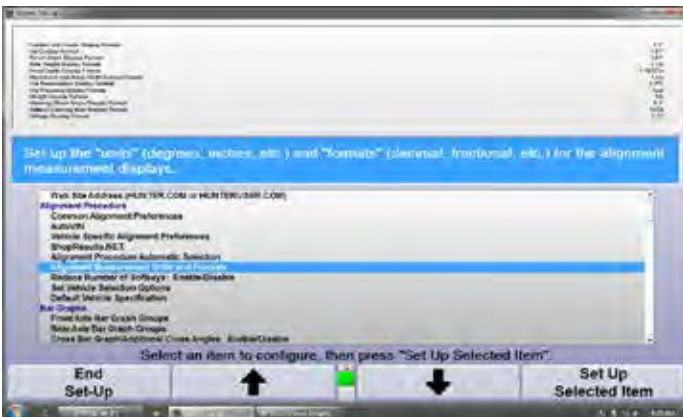


Figure 378

Select “Tread Depth Display Format”. Select the desired unit measurement.

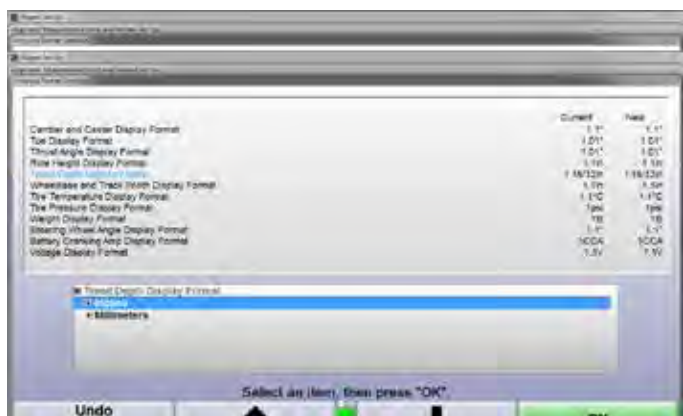


Figure 379

Select the desired display format. Select “OK”.

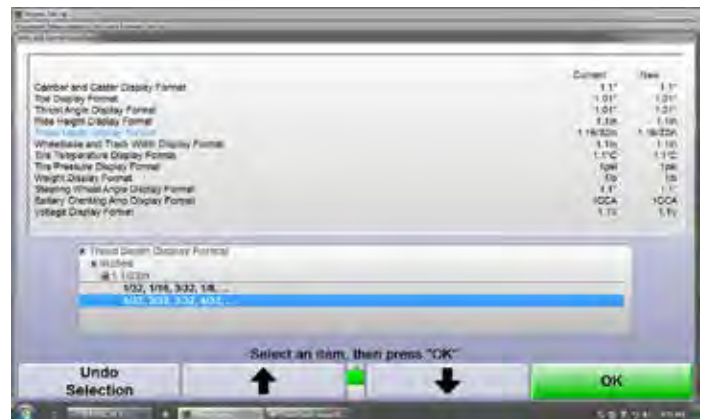


Figure 380

## Battery Health and Diagnostic Systems Check Setup

The battery health tool measures the voltage and cold cranking amps of the battery and wirelessly sends the information to the console.


The Diagnostic Systems check uses the OBD-II connector and Codelink device to check the vehicles legislative fault codes. The codelink device can also be used to input information to the console such as vehicle mileage and tire PSI.

These two devices are setup by going to the “Optional Equipment” section under the “Sensors” heading.



Figure 381

## Changing Component Wireless Settings

 In most cases, the wireless channels should be correctly set from the factory. Use this procedure if there is a wireless channel conflict.

From the setup menu, under “Sensors”, select “Cordless Channel Selection”.

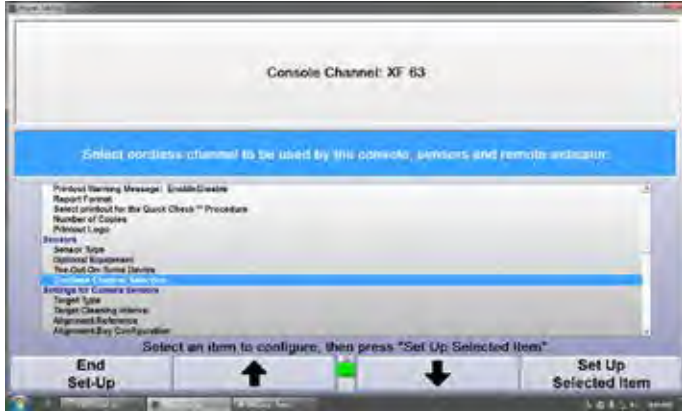


Figure 382

Wireless channels in use will be displayed. Press “Scan Channels” to identify channels that are in use. Select the desired channel, then select “Set Channel”.



Figure 383

Use the following chart to set the wireless channel on the wireless device.

Battery Tester	Tread Depth	Channel	Freq (MHz)	Battery Tester	Tread Depth	Channel	Freq (MHz)
S1				S1			
S3				S3			
S5		0	2405	S5		16	2425
S4				S4			
S2				S2			
S1				S1			
S3		4	2410	S3		20	2430
S5				S5			
S4				S4			
S2				S2			
S1				S1			
S3		8	2415	S3		24	2435
S5				S5			
S4				S4			
S2				S2			
S1				S1			
S3		12	2420	S3		28	2440
S5				S5			
S4				S4			
S2				S2			

Figure 384

Battery Tester	Tread Depth	Channel	Freq (MHz)	Battery Tester	Tread Depth	Channel	Freq (MHz)
S1				S1			
S3				S3			
S5		32	2445	S5		48	2465
S4				S4			
S2				S2			
S1				S1			
S3		36	2450	S3		52	2470
S5				S5			
S4				S4			
S2				S2			
S1				S1			
S3		40	2455	S3		56	2475
S5				S5			
S4				S4			
S2				S2			
S1				S1			
S3		44	2460	S3		63	2480
S5				S5			
S4				S4			
S2				S2			

Figure 385

## Quick Check Printout Setup

Quick Check printouts use a segmented style to generate a report based on what accessories were used during the Quick Check. Two printouts can be generated, accommodating anywhere from one to six segments of information on each page.

From the setup menu, under the “Printer” heading, “Select Quick Check™ printout contents”.

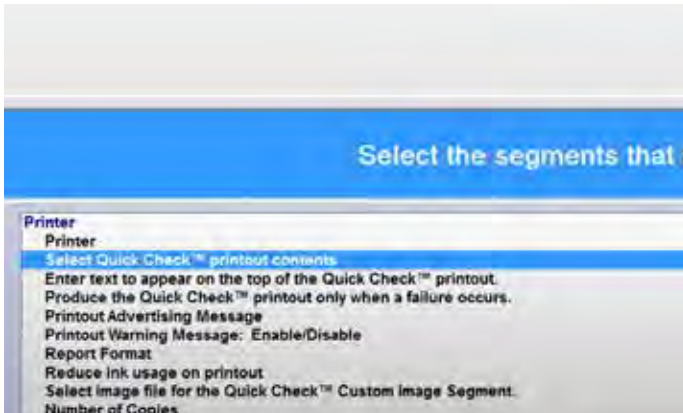


Figure 386

Select the segments to be displayed on page one and page two of the printout. Highlight a results segment and click the “Add” or “Remove” action buttons next to the desired page to add or remove that information from the printout.



Clicking on any of the segments opens a preview of that segment in the lower left corner with a short description above.



Figure 387

The segments can also be moved up or down on the printout using the action buttons.

Select “Print Preview” to ensure the layout looks as desired before pressing “OK”.

Clicking the “Custom Image” button allows the user to choose a custom image to appear anywhere on the printout. The image must be in JPG or PNG format and it will fill the space allotted for the segment so some distortion is possible.

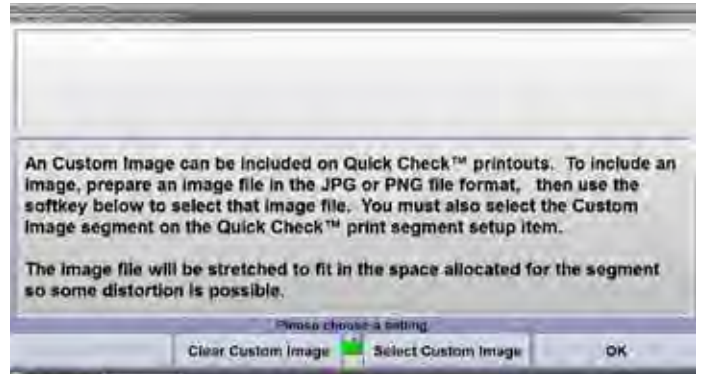


Figure 388

Select “Two Column Header” to enter up to 4 lines of text that will appear at the upper left and or right corners of the printout.

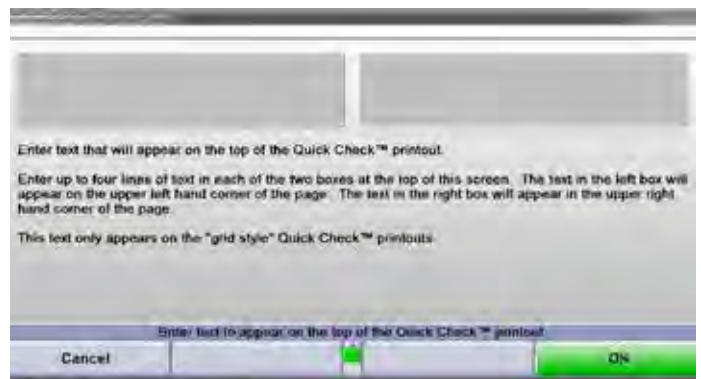


Figure 389

The “Print Logo” and “Advertising Message” setup is the same as it is in a standard alignment printout setup. Refer to “5.5 Printer,” on page 178 for detailed instructions.

## Quick Check Results

Hunter’s Quick Check® Results program automatically organizes results from every Quick Check® performed. Conversion rates can be tracked and the results displayed by date range. The format is similar to ShopResults within HunterNet®, however all data in QC Results is stored locally on the console but can be printed, exported and edited as needed.

Quick Check Results is accessed from the logo screen on the third row of softkeys.

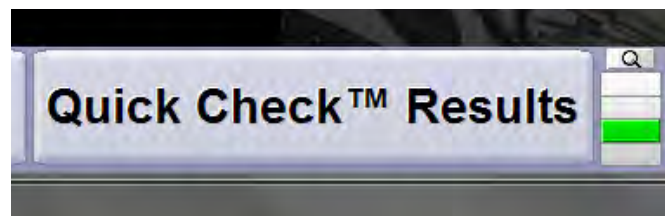


Figure 390



For detailed instructions on using the Quick Check Results program, refer to the Quick Check Results 1.0 User Guide, form 6825-T.

## Quick Check Procedure

The Quick Check procedure on the aligner is similar to the standard sequence. Refer to the Quick Check System Operation Instructions, form 6606-T.

### Diagnostic Systems Check

WinAlign will prompt the user to connect the CodeLink device before the odometer entry step in the Quick Check process. Follow the on-screen instructions and select "Continue" to begin communication with the vehicle.


 Selecting "Continue" without a CodeLink device connected will re-display the screen. Selecting "Skip Scan" with or without CodeLink connected will close the window and the Quick Check process will continue as normal.



Figure 391

At this point, if odometer entry is enabled under "Common Alignment Preferences", enter the vehicle's odometer reading using the CodeLink keypad.

Otherwise, begin rolling compensation while the DTC information and VIN are pulled. If the diagnostic scan

has not completed by the time rolling compensation is complete, the following screen is displayed.



Figure 392

If the scan is unsuccessful, a screen will appear prompting to either skip the test or rescan.



Figure 393

### Battery Test Process



Vehicle batteries contain acid and generate explosive gas while charging, wear safety glasses and use caution when working around batteries. Do not allow any metal to short across the battery terminals.

The battery tester has 4 status LEDs.



Figure 394

<b>POWER</b>	Indicates the test leads are connected to a battery
<b>COMMUNICATION</b>	Successful communication with the console receiver
<b>ERROR</b>	Communication error between the Hunter radio board and the Midtronics board. This could indicate a bad connection between the two boards inside the tester, or a bad XF transceiver or main board
<b>REVERSED POLARITY</b>	Test leads are connected incorrectly. Reconnect the test leads making sure the red clamp is connected to battery positive and the black clamp is connected to battery negative

At the end of the Quick Check, WinAlign will automatically select the OE battery specifications. Verify the battery type and rating displayed on the screen are correct before connecting the test clamps. If necessary, select "Custom Battery" to enter custom battery specifications.



Figure 395

**i** For some vehicles, a list may appear before the test proceeds prompting to select the correct battery according to model year, engine size and OEM battery rating.

Ensure there is nothing connected to accessory outlets, such as GPS units and device chargers.

Open the hood and locate the battery or the remote terminals according to the on screen instructions.

Remove the key from the ignition. For vehicles with push button start, make sure the vehicle is in the "Off" mode.

If equipped with keyless entry, press the lock button on the key fob twice to put the vehicle into "sleep" mode.

**i** The tester can detect even small loads on the battery and may generate a "Noise Detected" error and prompt for a re-test.

Connect the tester clamps as indicated on the test screen, red clamp to battery positive (or positive remote terminal) and the black clamp to battery negative (or remote ground). The green power LED should light up.

Within 10 seconds the blue communication LED should light up indicating the battery test results have been sent to the console. If the test is not completed in 10 seconds, reposition the test clamps.

**Unsupported Vehicles**

Due to Midtronics and/or manufacturers recommendations, some batteries cannot be tested at the remote terminals. For example, the Chevrolet Camaro, Cadillac CTS, Cadillac ATS & Cadillac XTS cannot be tested without disconnecting the battery from the vehicle.

WinAlign will briefly display a message that the vehicle selected does not support the battery test and automatically skip the step. A message is also included on the printout.

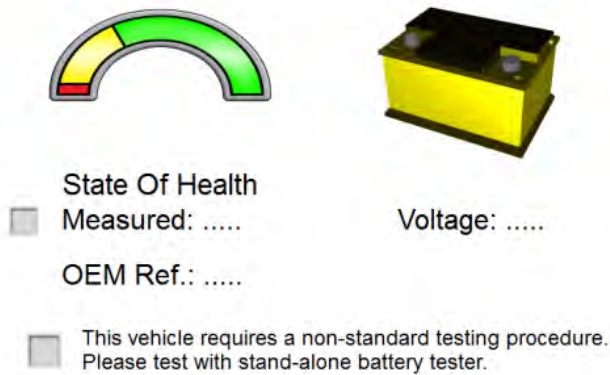


Figure 396

In some cases, only certain model year, special package, or dual battery vehicles do not support the battery test, in this case the selection screen will state whether or not the test is supported.

### **Custom Battery Selection**

If the vehicle is equipped with a battery type or rating that does not match the displayed values, select “Custom Battery” to enter different specifications.

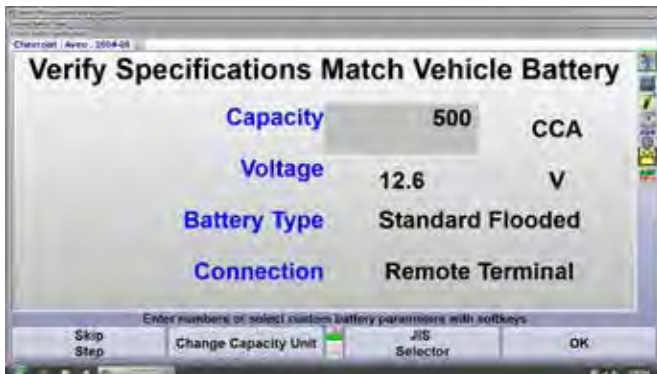


Figure 397

If the vehicle is equipped with an aftermarket battery with a different capacity specification, enter the custom specification in the gray box.

Select “Change Capacity Unit” from the first row of softkeys to choose a different rating unit, then enter the specification.

### **JIS Selector (Japanese Industrial Standard)**

JIS rated batteries have a 5 or 6 digit code embossed on the top of the battery.



Figure 398

Choose the JIS battery code from the list then select “OK”, the capacity and battery type will be filled in automatically.

Most vehicles are equipped with “Standard Flooded” lead acid batteries, however high end aftermarket batteries and some OE batteries may be of the “Absorbed Glass Mat” or AGM type. Select the proper battery type from the second row of softkeys then enter the capacity specification.

Choose the type of testing connection from the third row of softkeys. Always test under the vehicle hood at either the battery terminals or the remote terminals. The test screen will indicate the proper location for OE vehicles.

## 3.2 Quick Tread™ Tread Depth System

WinAlign 14.3 and above supports the use of drive over tread depth sensors during the Quick Check procedure. Drive over tread depth is available only during the Quick Check procedure, however if this console also performs alignments, the handheld tread depth tool can still be enabled and will work during alignments.

### Setup

Enable Quick Tread Sensors in the “Optional Equipment” setup menu.



Figure 399

When Quick Tread Sensors are enabled, additional tread depth setup options become available.

- Irregular Tire Wear Difference
- Over or Under Inflation Tire Wear Difference
- Update Quick Tread Software
- Update Quick Tread Pedestal
- Quick Tread Sensor Identification
- Tread Depth Sensor Cleaning Interval
- Air Knife Settings

### Irregular Tire Wear Difference

This setup option allows the shop to define a numerical value for the difference between measured inside and outside tread depths that is considered irregular on the Quick Check printout. For example if the value is set to 2/32", a vehicle with excessive camber might show inside and outside readings of 8/32" and 6/32" respectively. This

wear pattern would be displayed as irregular wear on the printout. The default value is 2/32".



Figure 400

Printout example of a vehicle with irregular and over inflated tire wear patterns.



Figure 401

### Over or Under Inflation Tire Wear Difference

This setup option allows the shop to define a threshold value between the center and the inside and outside shoulder of the tire that may be related to tire pressure. The default value is 2/32"

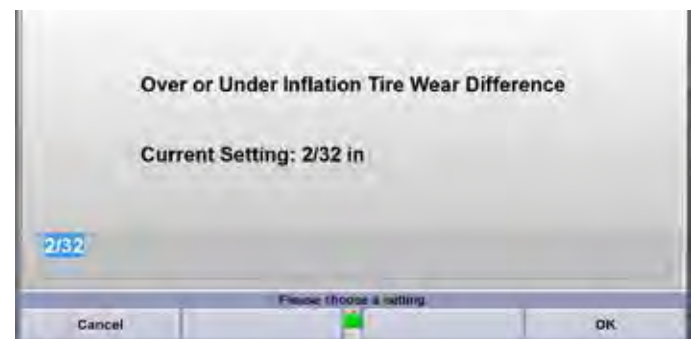


Figure 402

## Update Quick Tread Software

This screen allows the user to update the software in the tread depth sensors. Follow the on screen instructions then press “Ready”.



Figure 403

## Update Quick Tread Pedestal

Use this screen to update the software on the DAQ board in the pedestal. Follow the on screen instructions then press “Ready”.



Figure 404

## Quick Tread Sensor Identification

This screen displays the serial number, IP address and location of each sensor. The sensors can be physically identified using their serial number then matched to their corresponding location on the left or right ramp by clicking the selection boxes in the “Left” and “Right” columns.



Figure 405

## Tread Depth Sensor Cleaning Interval

This setup option allows the shop to set automatic reminders to clean the tread depth sensors. The interval can be set according to the number of tests performed and/or days between cleanings.



Figure 406

## Air Knife Settings

This setup item is used to set up the interval and duration on which the air knives operate. The air knives blow high pressure air across the laser and camera windows to clear off any water or debris that falls onto them. They can be configured to operate only after a specified number of tests and for a certain period of time.

Select “Enable Air Knife” then enter the number of measurements between cleanings and the duration of the cleanings in seconds. The feature can also be disabled if desired.

The solenoids operate sequentially. For example, if the duration is set to 5 seconds, one of the knives will operate for 5 seconds, stop, then the other knife will operate for 5 seconds. This is to ensure maximum air volume to each sensor’s air knife.



Figure 407

The air knives and shutters can be manually operated from the setup screen as well.

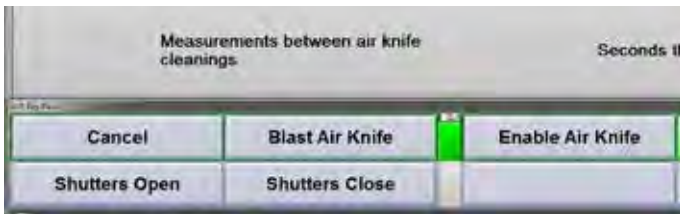


Figure 408

### **Optimizing the Stand Alone Quick Tread Procedure**

Some setup options can be changed to optimize the process time between checks. These options include automatic reset and print failures only.

### **Automatic Reset Option**

To produce a printout but skip the print preview screen, Enable Automatic Reset within “Common Alignment Preferences”.

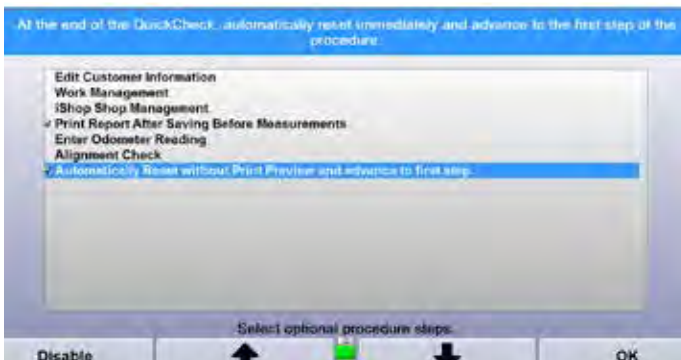


Figure 409

The system will reset and automatically advance to the test screen at the end of each test.

### **Print Failures Only Option**

To produce a printout only when failures occur, select “Produce the Quick Check printout only when a failure occurs” from the printer settings list in the setup menu.

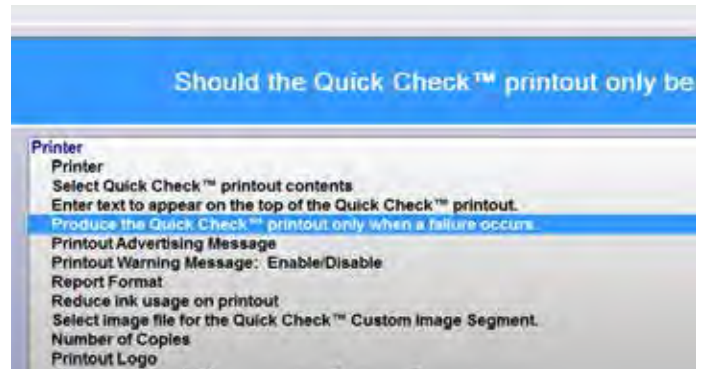


Figure 410

Choose “Print Only Failures” from the row of K-keys, only test results with a failure(s) will be printed.

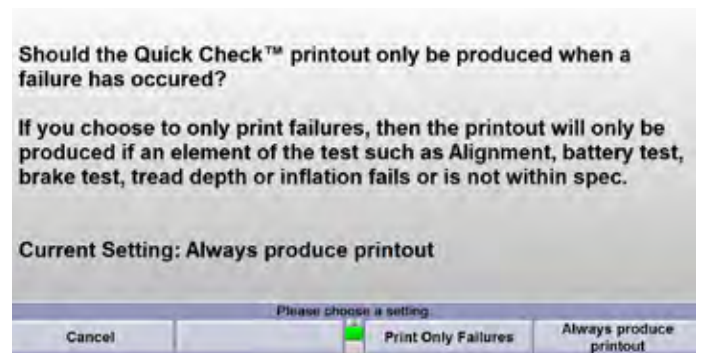


Figure 411

### **Printer Quality Settings**

Reducing the print quality from the printer settings menu will reduce the color saturation of the printout but will typically increase the speed at which it is generated.

## **Quick Tread Measurement Issues**

Certain operating conditions may result in incorrect or missing tire tread data.

### **Debris on Sensor Windows**

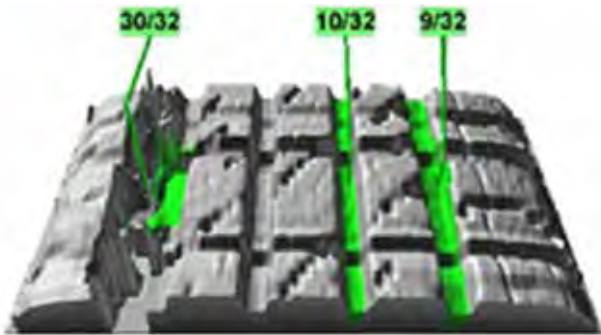


Figure 412

Large valleys in the tread rendering may indicate debris is stuck to that sensor window. The top plate opens up easily to allow cleaning of the sensor windows with blue glass cleaner and a soft rag.



Never use solvents such as brake cleaner to clean the sensors. Never power wash the sensors.

### **Intense Sunlight**

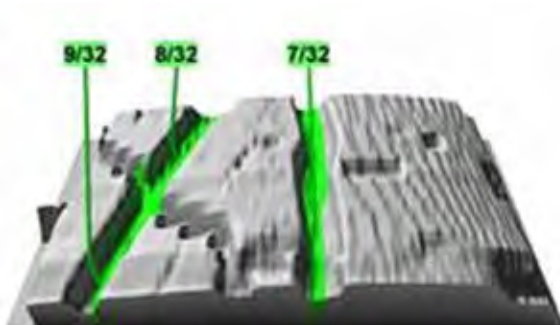


Figure 413

Intense sunlight shining into the sensor or onto the tire itself can cause the laser line to become washed out resulting in only a portion (or none) of the tire tread detected. If possible, lower or close bay doors to block out the sunlight.

### **Dual Rear Wheels**

Quick Tread will only capture two of the tires on the rear axle of dually trucks. For example, it could capture either the inner or outer left rear tire and the inner or outer right rear tire. WinAlign will display the tire which the software determines to be the clearest picture.

## **Hiding Measurements**

Due to the wide variety of tire designs, the system may occasionally generate faulty measurements. For example, sipes may be measured and displayed, which are not an accurate representation of tread depth.

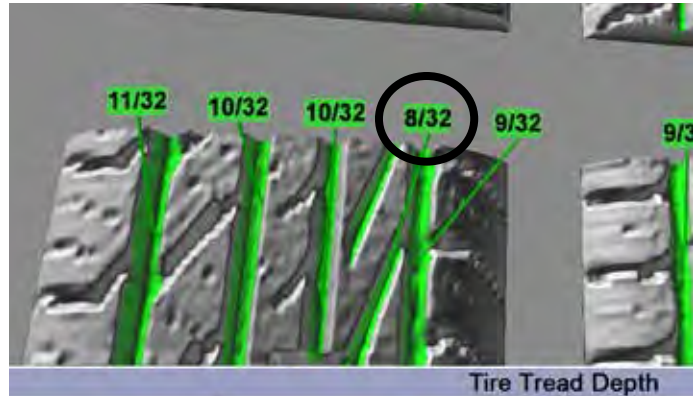


Figure 414

To hide a measurement, pause the process at the rendering screen and mouse over the false reading.

The box will turn gray, right click on the reading and select "Hide this groove". Multiple readings can be hidden in this manner.

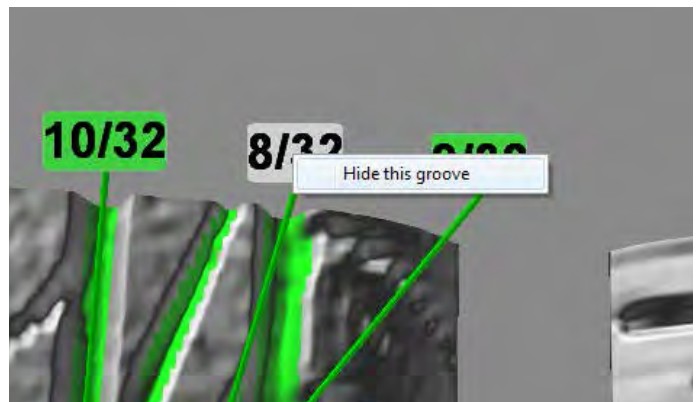


Figure 415



Figure 416

To restore all measurements after hiding one or more, right click on any of the other measurements and

select "Restore Grooves". All of the previously hidden measurements will be restored.



Figure 417

When satisfied with the results, exit the screen. The four images will flash as the new images are being saved. These new measurements will also be displayed on the printout.

### ***Accessing the Sensors***

The sensor cover plate is secured by a latch that is similar to many automotive hood latches. Locate the latch in the top of the cover plate.

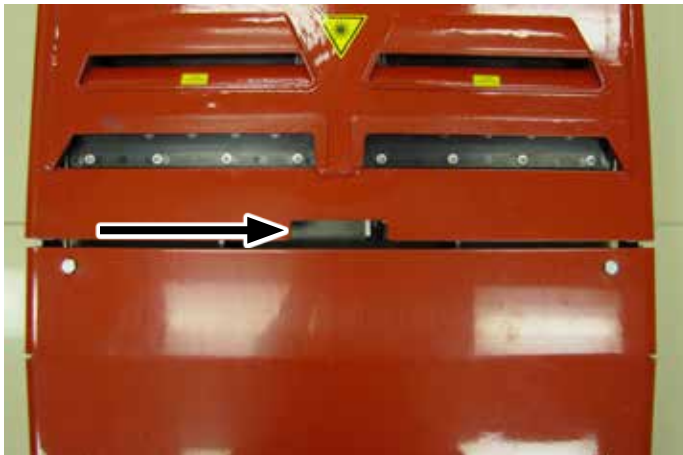


Figure 418

Slide the latch toward the outside of the cover plate with one hand while lifting up on the plate with the other hand.


 The cover plate is heavy, use caution when opening and closing the plate. Keep hands and fingers clear of pinch points.



Figure 419

To close the cover, lower the cover with one hand while sliding the latch with the other hand.


 The cover plate will not close unless the latch is opened, do not drop the cover plate onto the latch or slam closed.



Figure 420

### ***Quick Tread Operation***

Drive the vehicle straight across the Quick Tread sensors at a speed of 2-8 mph (3.2-12.8 kph). Tread depths will be measured and the data sent to the console.





If the Quick Tread system is being used with a Brake Tester, drive the vehicle across at a speed of 4-8 mph (6.4-12.8 kph).



**Figure 421**

Position the vehicle for the next step, such as an alignment check, then proceed through the rest of the Quick Check process.



**Figure 422**

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