Form 6611TE-05, 06-13
Supersedes Form 6611TE-05, 01-13

WinAlign Operation Instructions for VAG Aligner

Version 14.0

HUNTER Engineering Company

Contents

Getting Started

1.1 Introduction

This manual is a supplement to the standard WinAlign Operation Manual, Form 3850T, supplied with this equipment and provides information and operation instructions required to operate the VAG 1944 and VAS 6230 Computerized Wheel Alignment System.

This manual assumes that you are 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 "Recall Specifications."* These references should be read for additional information to the instructions being presented.

Videos supporting the operation of software and hardware may be accessed by selecting the "AlignGuide™" icon  from the procedure bar located on the right side of the display.

Turning Power On

The main power switch is located on the back of the console where the AC power cord is connected to the cabinet. Some cabinet designs will have an additional power switch on the left side of the cabinet. This switch is used to power On/Off the systems computer but leaves power on to the charging stations available for DSP500 sensors and remote indicators.

VAG Account

The Volkswagen AG logo screen is only displayed when the VW/Audi account is activated. The "WinAlign" logo is shown when the standard account is activated.

The "VW/Audi" account includes specific procedures required by Volkswagen and Audi and is intended for use by authorized VW and Audi dealers.

K1 - Exit Aligner K2 (Blank) K3 (Blank) K4 - Begin Alignment

There are two possible selections on the first level of keys displayed on this screen:

"Exit Aligner" is activated by selecting the K1 softkey. Always press "Exit Aligner" before turning the power off to shut down the system.

"Begin Alignment" is activated by pressing the K4 softkey. The green highlight indicates this is the logical next step in the alignment process.

Other softkey selections will appear if multiple account keys are available.

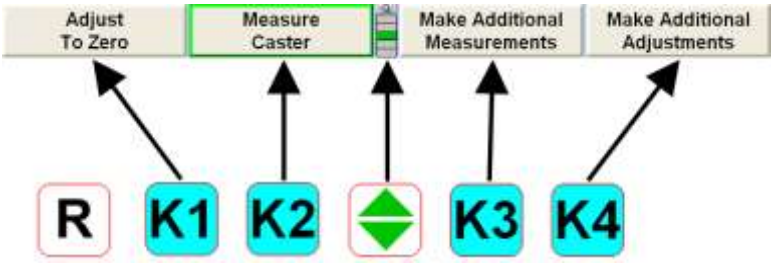
1.2 Operating the Console

Using “Softkeys”

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

- K1 — K1 key
- K2 — K2 key
- K3 — K3 key
- K4 — K4 key
- Menu shift key
- R — Reset key

The four menu 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.



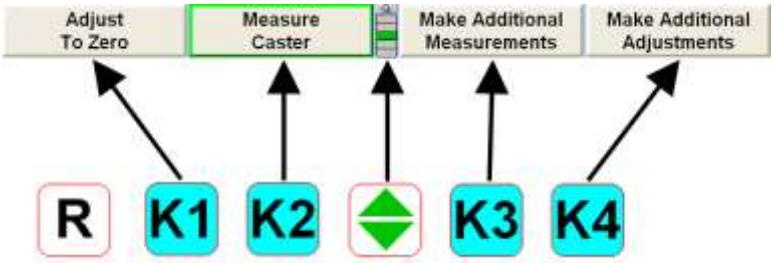
The vertically stacked squares between the K2 and K3 softkeys indicate how many levels of menu labels are available. Six levels of menus are possible. The highlighted box indicates the menu level that is currently displayed.

Pressing the menu shift softkey, , changes the menu level. When this key is pressed, the menu labels will change to the next level “down.” If the last menu level is currently displayed, the next step will be to the first menu level. To go to the next menu level “up,” press Shift and .

Pressing Shift and F6 will enlarge the current softkey menu level. The softkey associated with the label is shown on the left side of the labels and the menu level is indicated on the right side of the labels. Pressing F6 again will cause the menu to return to the normal softkey setting.

Pressing F6, or pressing and holding with a pointing device on the menu level indicator, will cause all of the menus available to appear. The dark green color, displayed behind the entire row of softkeys, indicates the active menu level. Pressing F6 again will cause the menu to return to the normal softkey setting.

Throughout this manual, the statement Press “nnnnnnn” 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 softkey labels have a green border as depicted around the K4 softkey shown above.

Generally, the softkey with the green border (usually K4) is the appropriate key to press to continue with the procedure being performed.

Using the Handheld Infrared Wireless Remote Control

The remote control provides operation of the WinAlign® program from a distance by duplicating the five softkeys.

The remote control has six softkeys: K1 , K2 , K3 , K4 , , and a zoom key . Pressing will enlarge the current softkey menu level and is equal to pressing Shift and on the main keyboard.

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

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

Resetting the Program

The wheel alignment program may be reset at any time during the measurement process by pressing the R key, located at the upper left-hand corner of the keyboard.

A confirmation screen will appear to verify that the “Reset” button was pressed intentionally.

When this screen appears, press “YES” to reset the program or “NO” if the program should not be reset.

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

1.3 Sensors and Adaptors

Using the optional Tire Clamp Assembly Kit, 20-1789-1, to a self-centering wheel adaptor, 175-351-1 or 175-350-1 allows the wheel adaptor to be mounted on rims that do not have a suitable lip or shoulder to accept rim studs or spade sleeves.

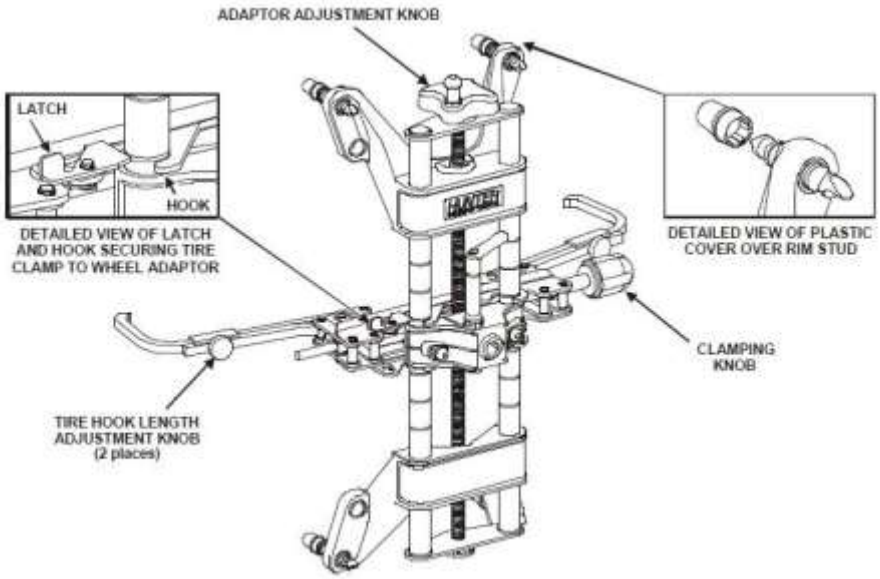
The tire clamp assembly can be installed with or without a sensor attached to the adaptor.

Install Self-Centering Tire Clamp Assembly to Wheel Adaptor as follows:

Position the hooks located on backside of tire clamp over the support section of the adaptor.

Push tire clamp and adaptor together, catching the rods of the adaptor with the four hooks: two above and two below the DSP instrument support section.

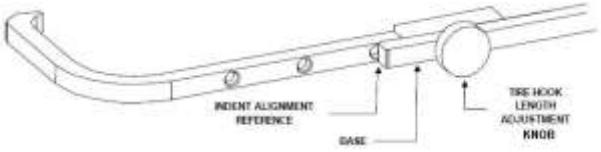
The latch will lock the clamp assembly onto the adaptor when properly seated.



Install plastic covers over each rim stud to protect the face of the wheel.

Mount Wheel Adaptor/Tire Clamp Assembly to Wheel as follows:

- Turn the clamping knob counter-clockwise to open the tire clamps.
- Loosen the tire hook length adjustment knobs and move the hooks to the lowest setting that allows the hooks to span the tire tread diameter. Tighten knob to secure. Both tire hooks must be at the same setting to make them equal length.
- Center the adaptor on the wheel by placing the two lower covered rim studs on the wheel rim and then turning the adaptor adjustment knob until upper covered rim studs contact the same portion of the rim.
- Turn the clamping knob to engage the tire hooks into the tread. Continue adjusting until the adaptor is tightly pulled against the rim. Test the security of the installation by lightly tugging on the wheel adaptor.



Approved VAG TD Target & QuickGrip Adaptor - WinAlign® Version 12 or Newer

Approved Wide Angle front TD Targets™ are different from the standard front TD Target™ alignment targets. The Wide Angle version have a larger offset than the standard TD target to accommodate toe-out-on-turns and max steer measurements without adding additional pieces. QuickComp™ roll forward and standard rolling compensation are both available with this sensor.

Standard Front TD Target Wide Angle Front 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.

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

- Small - 20” to 26” O.D. Tires
- Medium - 25” to 32” O.D. Tires
- 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.

Placing QuickGrip Adaptor on Wheel

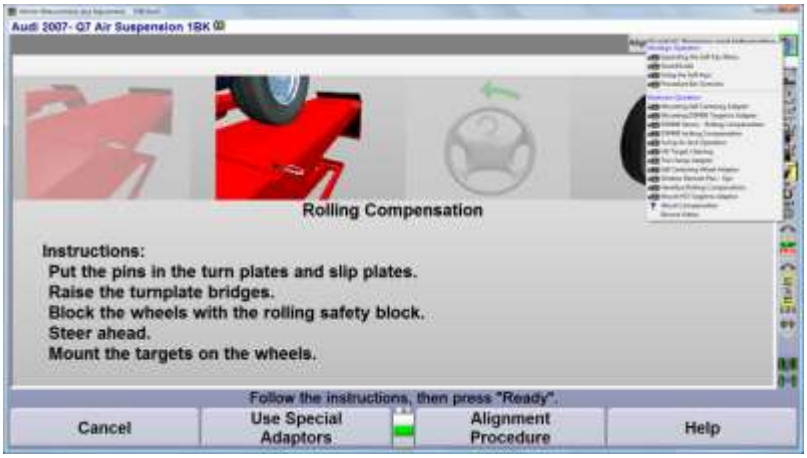
The QuickGrip Adaptor simply mounts to the wheel by placing the QuickGrip Adaptor on the wheel and using the hooks to grip the tire tread.

Squeeze the clamp on the right-hand side of the QuickGrip Adaptor to secure the QuickGrip Adaptor to the wheel. The adaptor does not need to be perfectly centered on the wheel. It is important for the adaptor to be positioned so that it will not rock or move on the wheel.

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

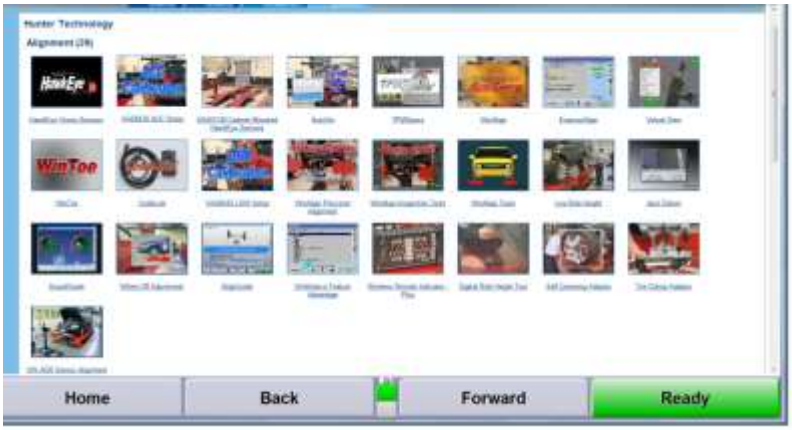
1.4 Help Tools

Additional video and document support is available within the WinAlign software. The "Help" softkey offers written help documents. The "AlignGuide™" menu is accessed from the question mark icon at the top of the procedure bar located on the right side of the display.



Select the "Help" softkey to access written help information.

Select the "AlignGuide™" icon  from the top of the procedure bar to access informative videos.

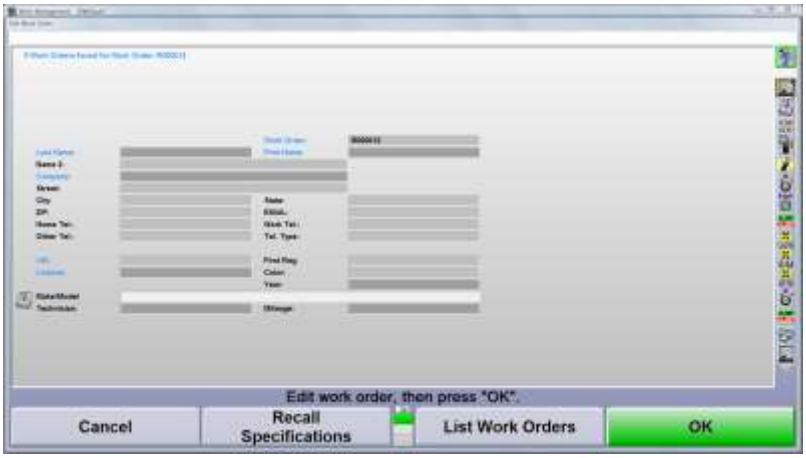


Operation

2.1 Work Order Information

Press “Begin Alignment” to begin the wheel alignment measurement process. The “Work Management” screen will appear. This screen shows the basic work order information.

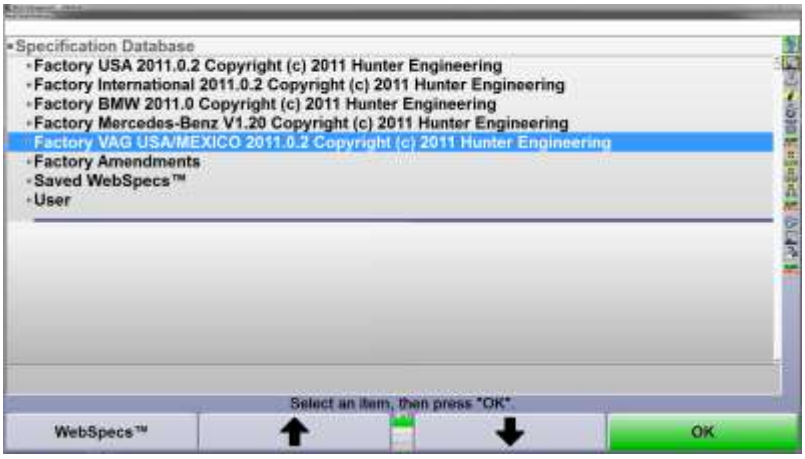
Enter the information. Dark shaded fields must be filled in to continue.



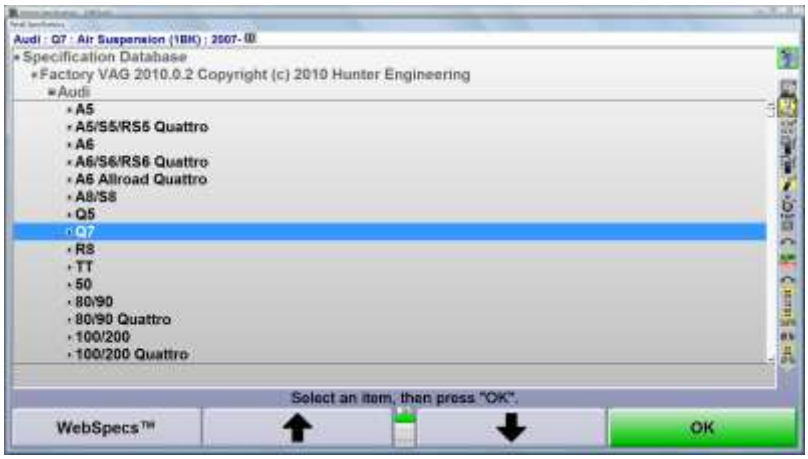
Detailed information regarding this display is available in a later section. Use the TAB key on the keyboard or the mouse to move from field to field on the display.

2.2 Specifications

The "Factory USA" database and the "Factory VAG" database may be installed in the alignment machine. Use the "Factory VAG" database when available.

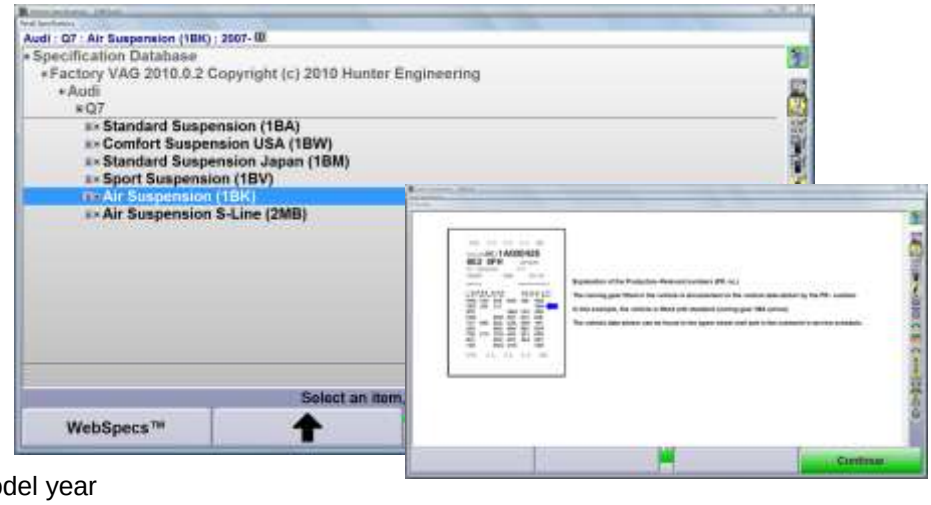


Use the K2 and K3 softkeys or the mouse to select the desired model from the Factory Specification database. It is crucial to select the exact vehicle with the exact options, such as wheel diameter, sport suspension, etc.

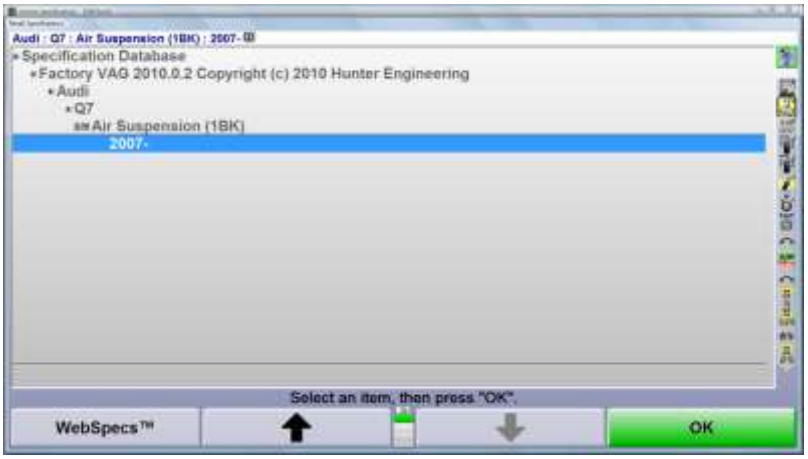


For help identifying vehicles, specific body styles, and codes, select the (info) icon.

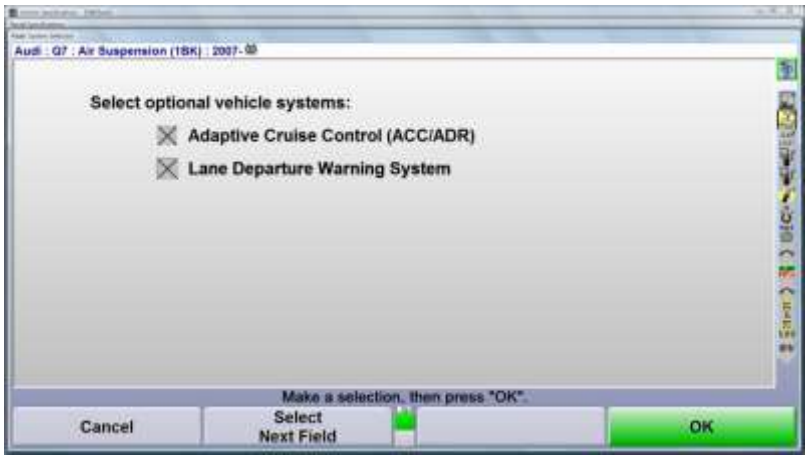
This icon will display all vehicles that fall under this type and illustrate the years of manufacture, and the body style differences. In some cases another will appear, indicating more info is available, such as the example below.



Select the model year

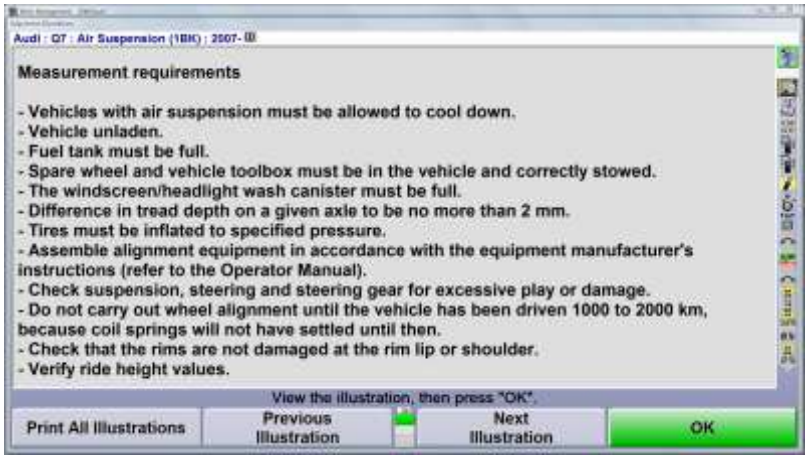


Select additional optional equipment which may be available.

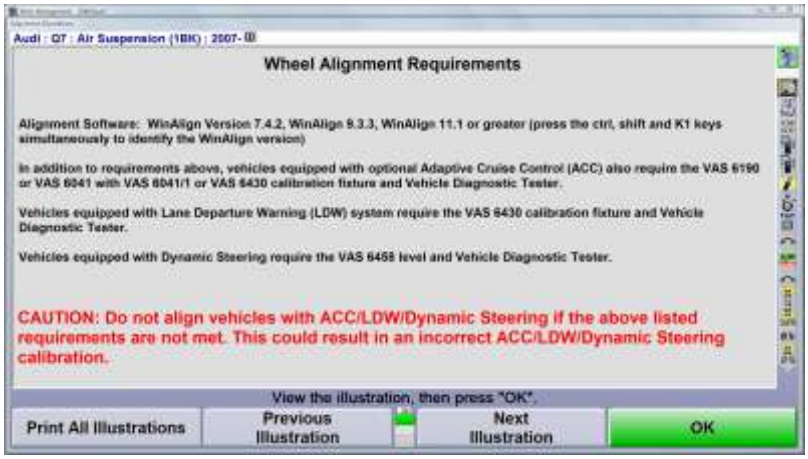


Vehicle Specific Alignment Information

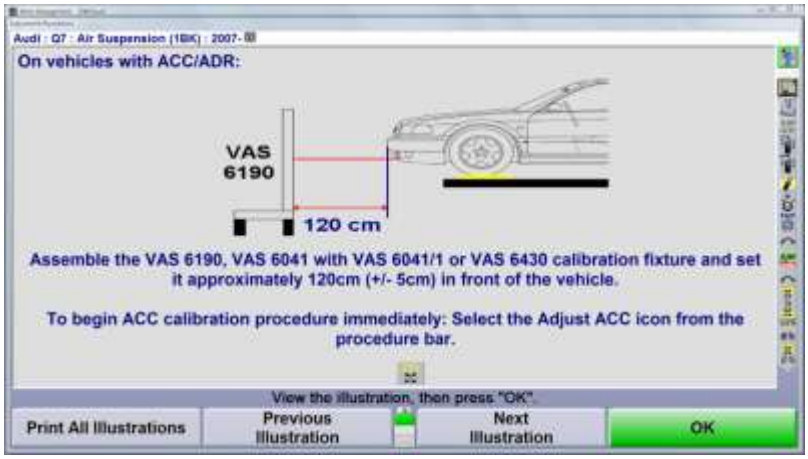
Information relative to the wheel alignment process may be displayed. This may include information on preparation of the vehicle for wheel alignment.

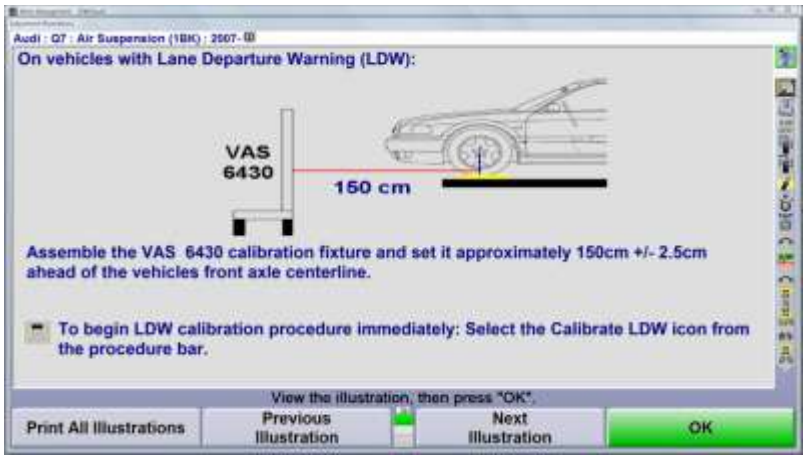


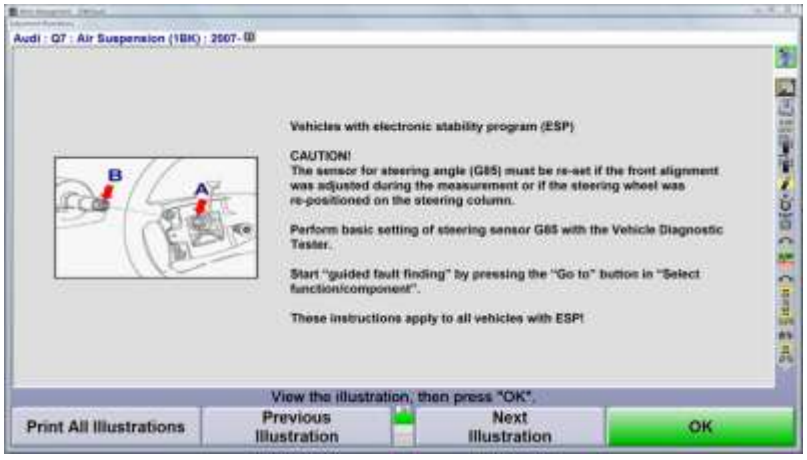
Specific WinAlign software versions and OE equipment may be required.

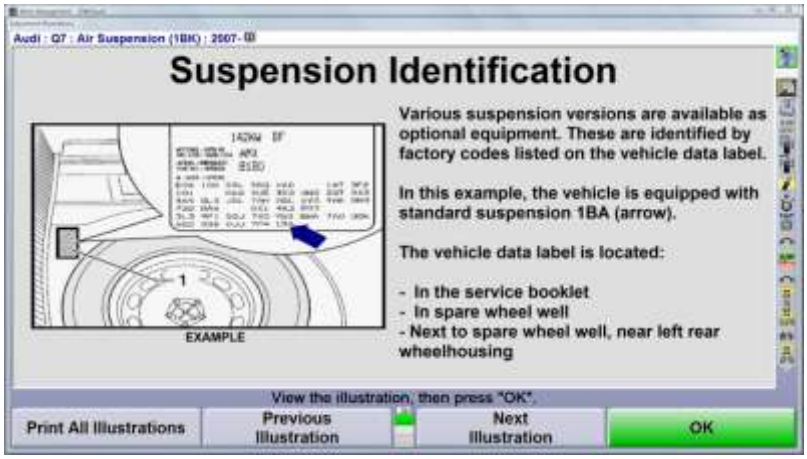


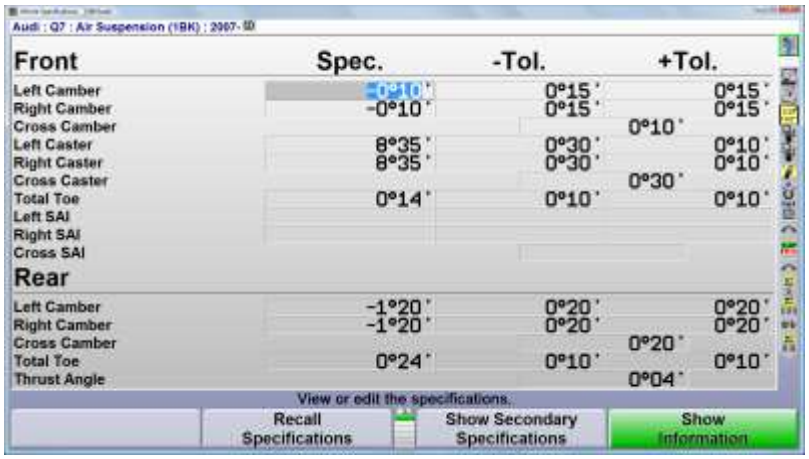
Select K-4 “OK" to advance the program to the next process. Pressing K-3 "next Illustration" will cycle through the information displays.”


Audi : Q7 : Air Suspension (1BK) : 2007-
On vehicles with ACC/ADR:
VAS
6190
120 cm
Assemble the VAS 6190, VAS 6041 with VAS 6041/1 or VAS 6430 calibration fixture and set it approximately 120cm (+/- 5cm) in front of the vehicle.
To begin ACC calibration procedure immediately: Select the Adjust ACC icon from the procedure bar.
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK


Audi : Q7 : Air Suspension (1BK) : 2007-
On vehicles with Lane Departure Warning (LDW):
VAS
6430
150 cm
Assemble the VAS 6430 calibration fixture and set it approximately 150cm +/- 2.5cm ahead of the vehicles front axle centerline.
To begin LDW calibration procedure immediately: Select the Calibrate LDW icon from the procedure bar.
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK


Audi : Q7 : Air Suspension (1BK) : 2007-
B
A
Vehicles with electronic stability program (ESP)
CAUTION!
The sensor for steering angle (G85) must be re-set if the front alignment was adjusted during the measurement or if the steering wheel was re-positioned on the steering column.
Perform basic setting of steering sensor G85 with the Vehicle Diagnostic Tester.
Start "guided fault finding" by pressing the "Go to" button in "Select function/component".
These instructions apply to all vehicles with ESP!
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK



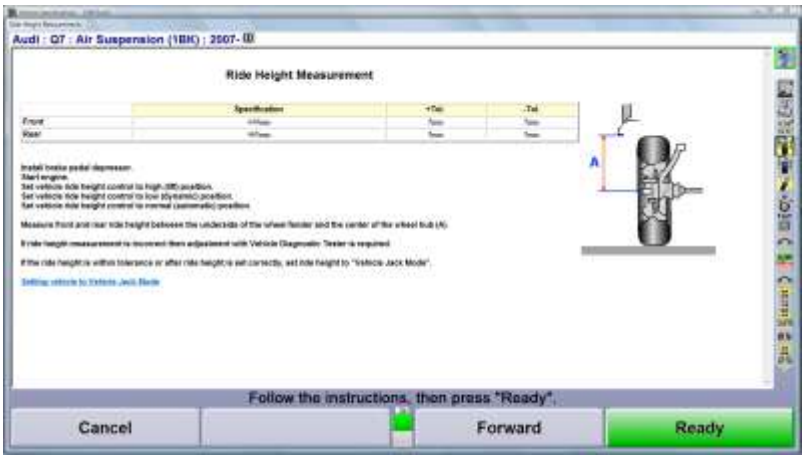


Additional Information screens may be presented throughout the procedure.

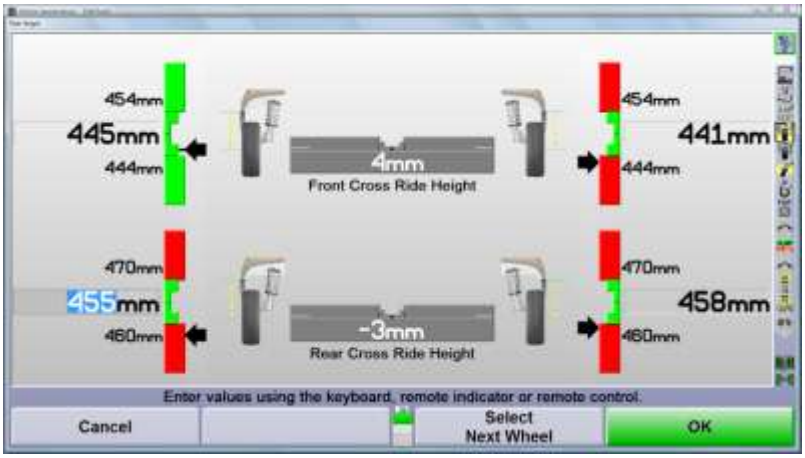
These screens are specific to the vehicle selected from the specification database and designed to further define how the vehicle is equipped and/or remind the technician of procedures or processes required for the vehicle selected.

Ride Height

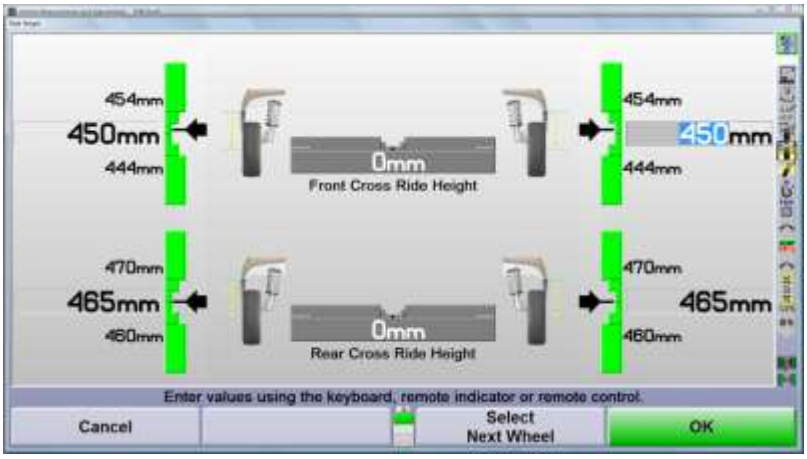
If ride height measurements are required, WinAlign® displays a ride height entry screen with instructions on how to measure ride height for the vehicle selected.



Current ride height values may be manually entered via the keyboard or electronically entered using Hunter's Live Ride Height targets..



If the ride height is not within specifications, consult the repair manual for proper use of the Vehicle Diagnostic Tester. Correct the ride height using the Vehicle Diagnostic Tester.



If the ride height was corrected, enter the measurements again. Press K4 "OK" to continue

2.2 Measurements

Sensor Operation

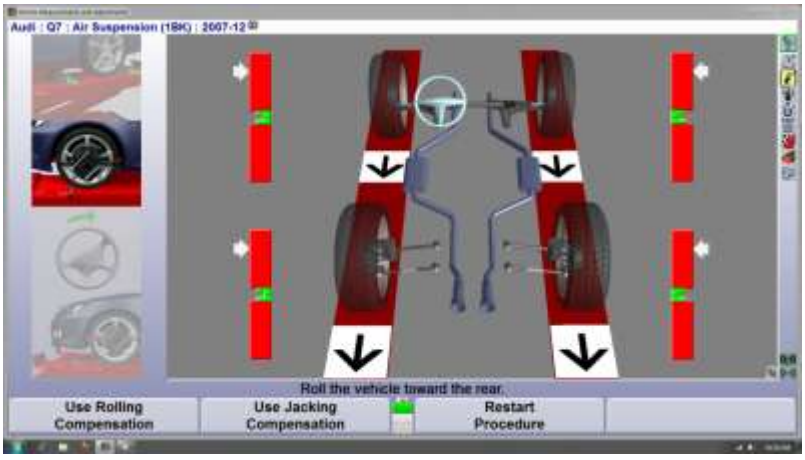
Place the vehicle in position for compensation.

HawkEye Hi-Def targets:

- Compensation method is rolling compensation (roll rearward, the forward)
- Position the front wheels centered on the turnplates.

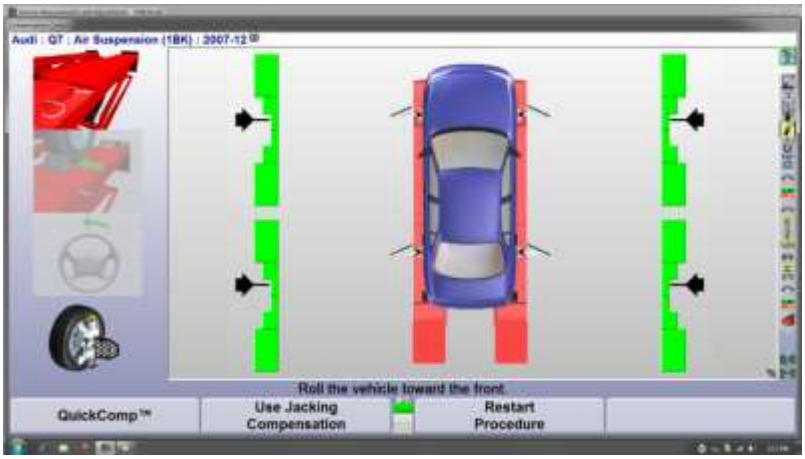
HawkEye Elite targets:

- Compensation method is QuickComp (roll forward only)
- Position the leading edge of the front wheels even with the center of the turnplates.



The lift rack should be level during the compensation process. The front turnplates and rear slip plates should be locked.

Place the vehicle's transmission in neutral with the engine off.



Roll the vehicle using the left rear tire until the bar graphs are green and the arrows are well within the green area of the bar graph. Hold the vehicle until the bar graphs change.

When compensation is complete:

- install the brake pedal depressor
- unlock the front turnplate and rear slip plates
- the vehicle's transmission may be placed in Park at this time.

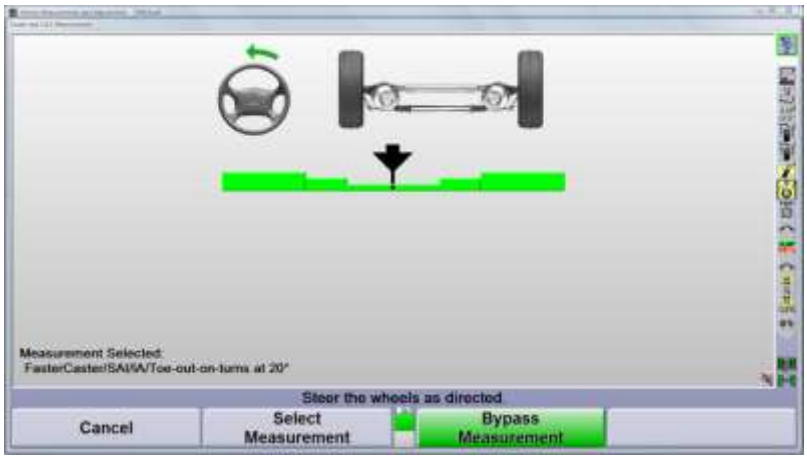
Do not disturb the level condition of the sensors. The sensors will remain locked the remainder of the alignment process or until unlock instructions are displayed.

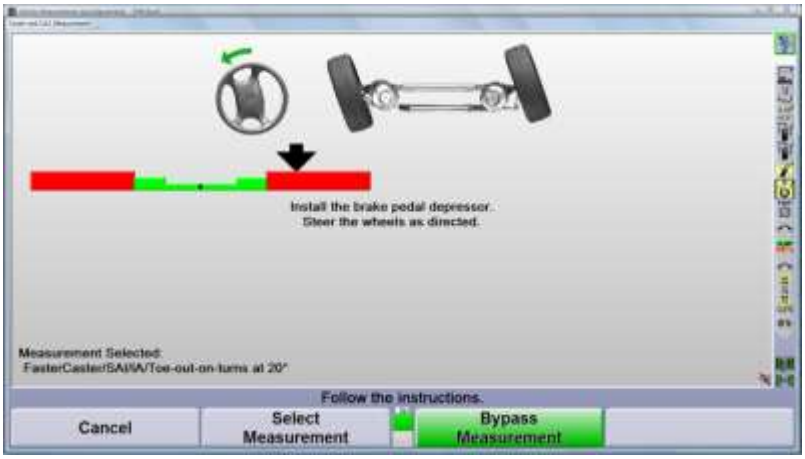
Caster, S.A.I., Included Angle and Turning angle Measurements

Audi's process requires Caster, SAI/IA and toe-out-on-turns at 20 degrees to be measured using a single process.

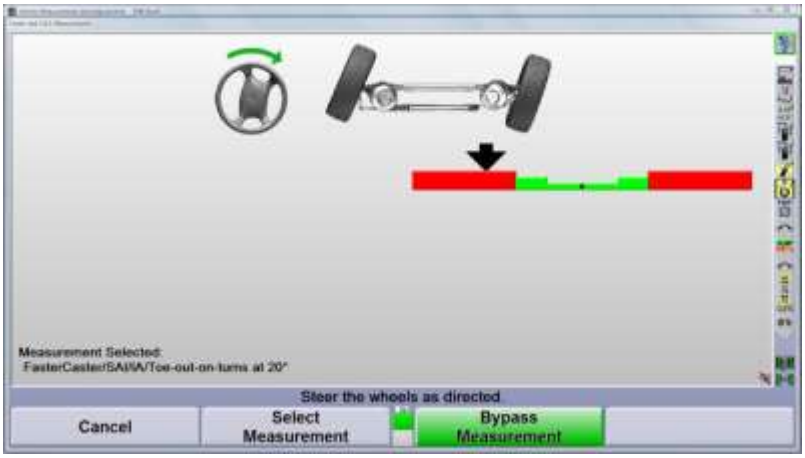
Follow the instructions given on the screen. The program will wait until all sensors are stable before automatically moving to the next screen.

This is necessary because all “Before” measurements are saved at this time.

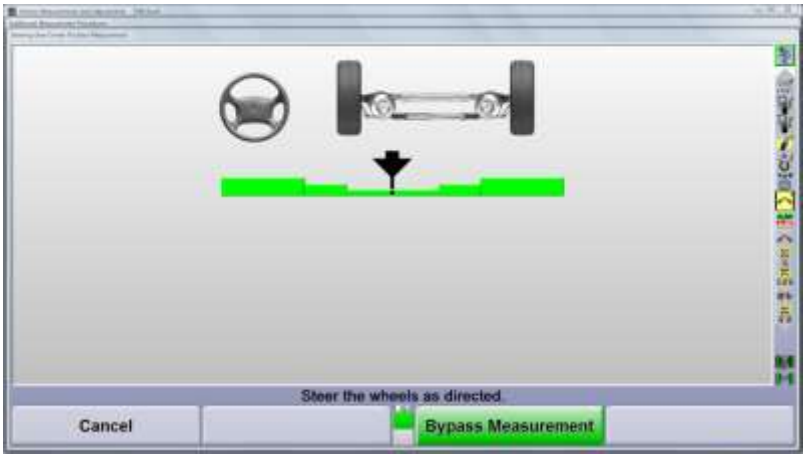




Steer to the left as directed until the arrow is in the lower valley of the graph. Hold the wheels still until the bar graph changes.



Steer to the right as directed until the arrow is in the lower valley of the graph. Hold the wheels still until the bar graph changes.

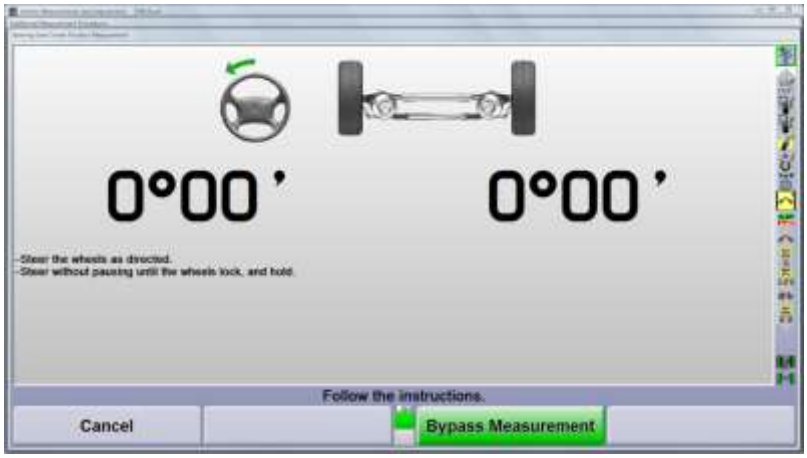


Steer back to the left until the arrow is centered in the bar graph. Hold steady until the screen changes.

“Before” Measure Maximum Steering Angle

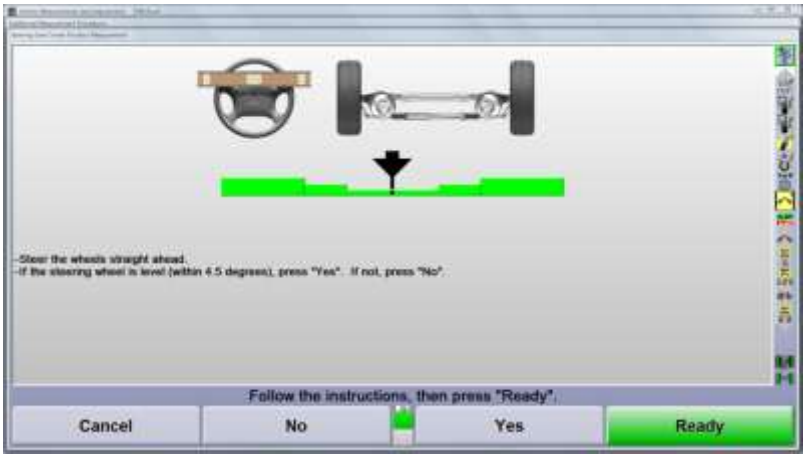
Maximum Steering Angle will be measured and the center of the steering travel will be determined in the next measurement. Follow the instructions and then steer the wheels as directed.

Conventional sensors should be unlocked for this measurement.



Steer the wheels as directed with a steady motion until maximum steer angle is achieved to the left. Hold the wheels until the display indicates to steer right.

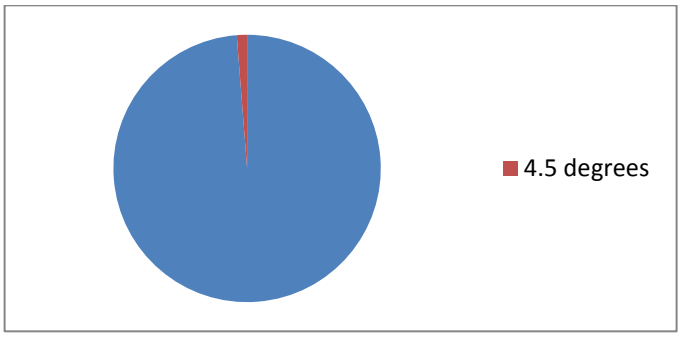
Repeat this process when steering to the right.

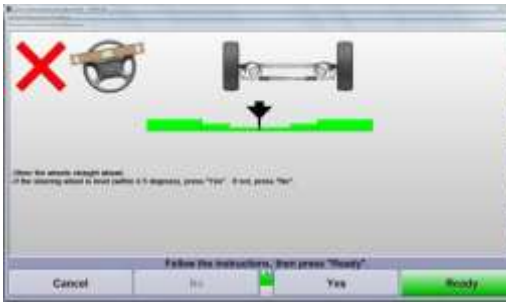


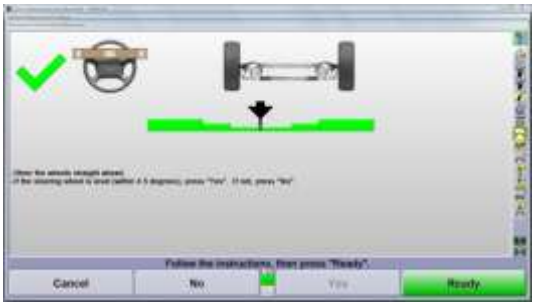
Return the wheels to the straight ahead position.

Reply "Yes" or "No" to the steering wheel position question on the display.

The graphic below offers a visual representation of 4.5°angle.

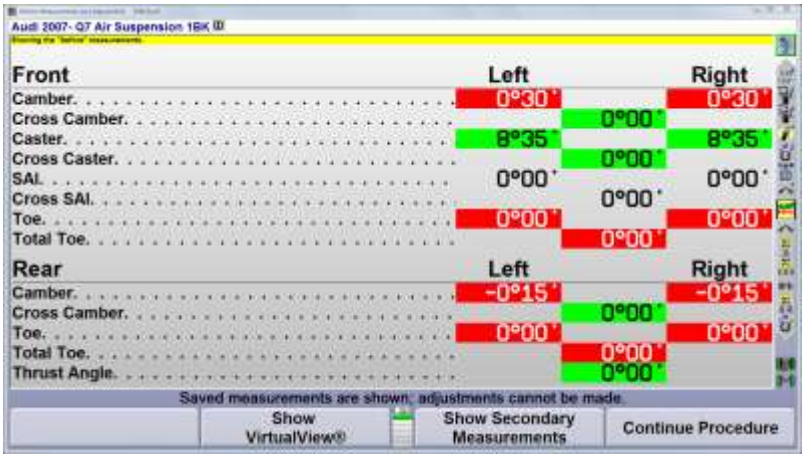






The screen will indicate the choice made. Press "Ready" to continue.

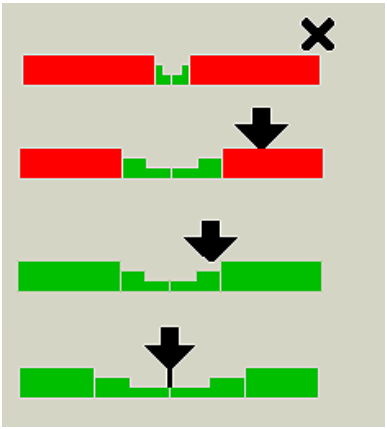
The 'Before" measurements screen will appear after all measurements are obtained.



Press "Continue Procedure" to continue.

2.3 Adjustments

Bar graphs quickly indicate the position of the angle compared to specification.



⇦ Very far out of specification

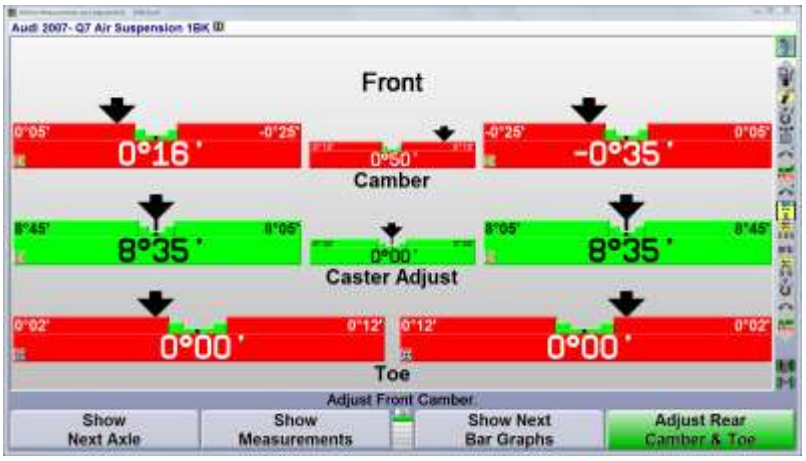
⇦ Not too far out of specification

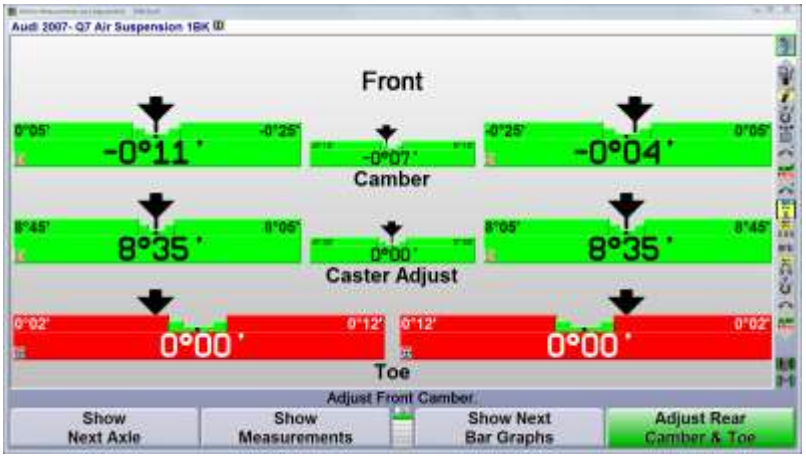
⇦ Within specification nearing end of tolerance

⇦ Exactly on Preferred Specification

Front Camber Adjustment via Subframe

This procedure is necessary to establish the correct centerline for future adjustments. Adjust the subframe, if appropriate, to equalize front camber. If not, select "Adjust Rear Camber & Toe."

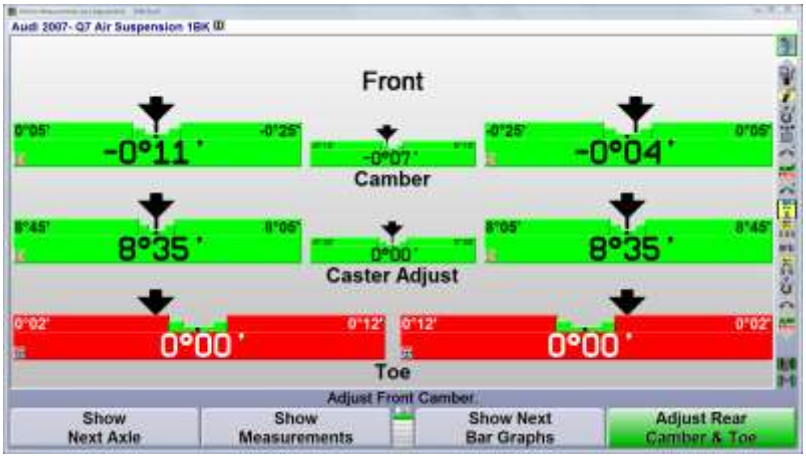




Instructions may be found by showing all soft keys and selecting "Illustrate Adjustments."

Rear Camber Adjustment

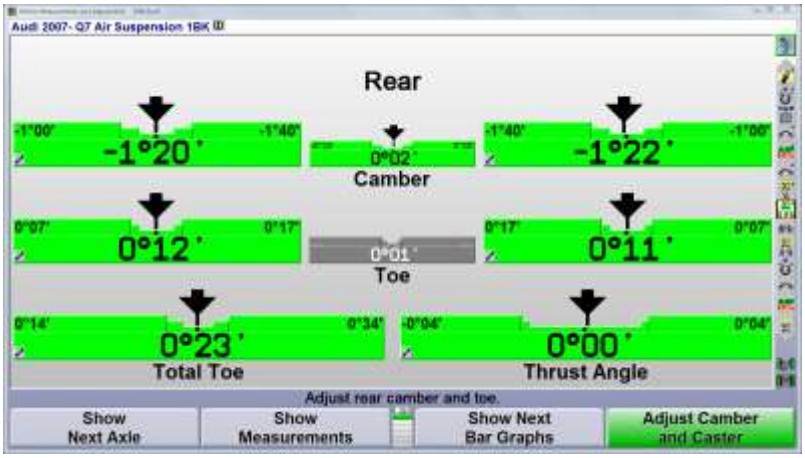
Adjust rear camber as required on both left and right sides.



The "Raise Selected Axle" function may be used to make the adjustment easier. This is discussed in further detail later in this manual.

Rear Toe Adjustment

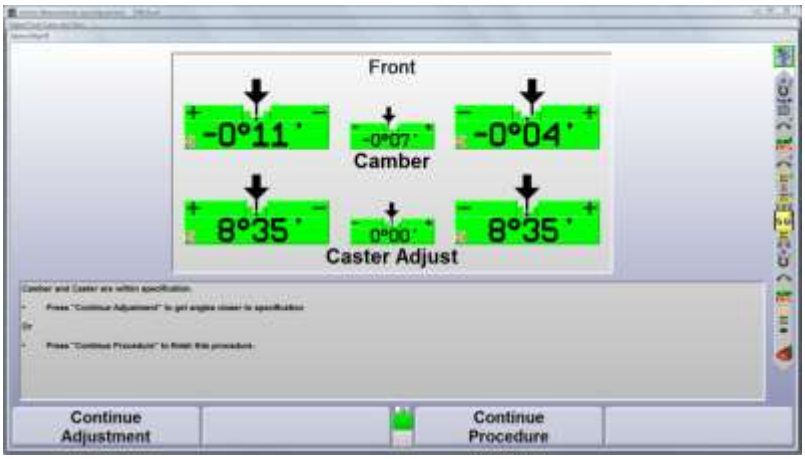
After camber has been successfully adjusted, adjust left and right rear toe.



Select "Adjust Camber and Caster" to continue.

Front Camber and Caster Adjustment

The following display will appear if front camber and caster are within specifications. This display offers the opportunity to make small changes to front camber, if needed.



Select "Continue Adjustment" if adjustments are needed.

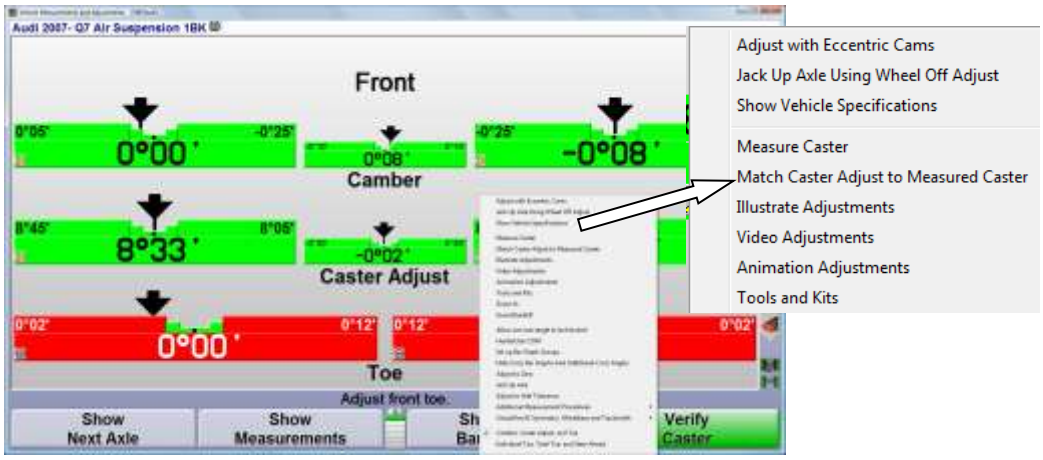
Caster Bar Graph doesn't Match Measured Caster

Caster measurement values will change anytime the wheel rotates forward or rearward.

If the service brakes fail to hold the wheel locked, the values on the caster bar graph may change without the caster angle being changed.

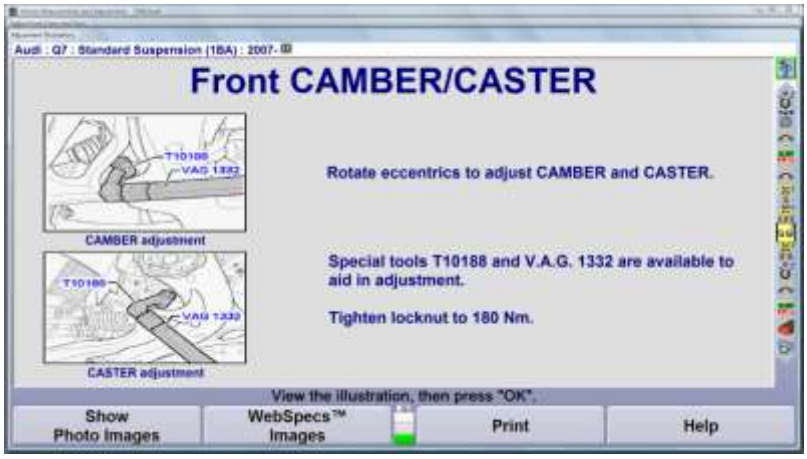
<u>To reset the caster value, follow these steps</u>.

Camera based sensors: Place the mouse pointer on the caster bar graph wrench icon and left click to obtain the context sensitive drop menu. Select "Match Caster Adjust to Caster Measurement" from the list.

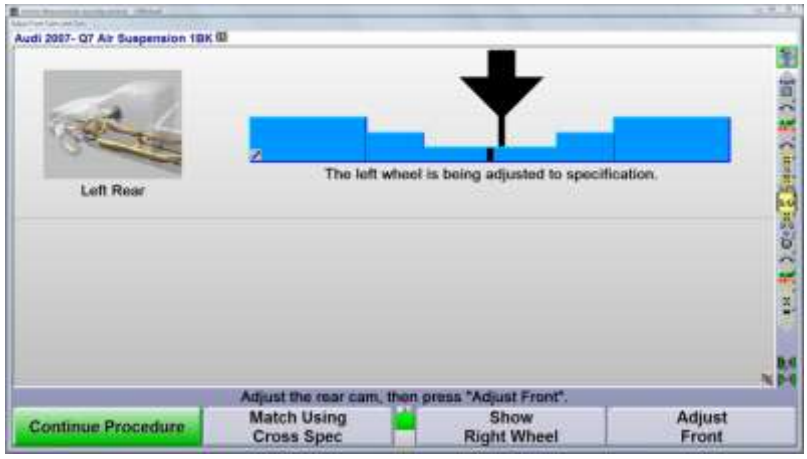


Conventional sensors: Adjust the level condition of the front sensor until the last measured caster value is displayed. Lock sensor securely.

The Q7 used in this example offers a front camber and caster adjustment.



WinAlign will open the "Control Arm Monitor" program to make the adjustment easier. Follow the instructions on the display to adjust left and right camber/caster.



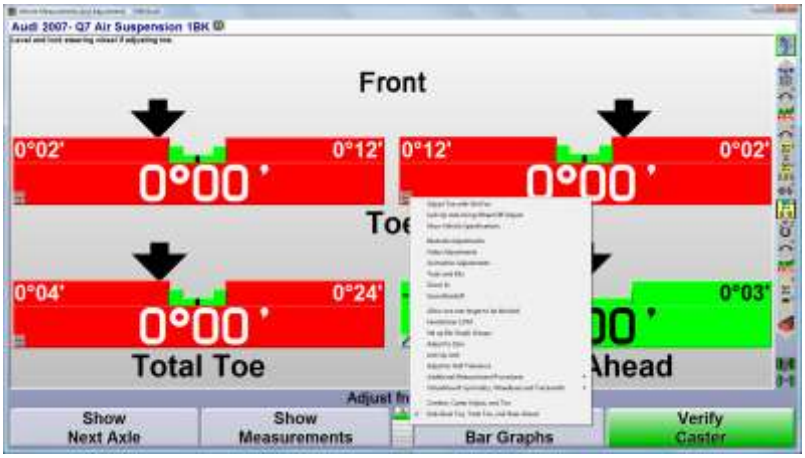
Select "Continue Procedure" to continue without making adjustments.

Front Toe Adjustment

The front toe adjustment display includes the individual toe bar graphs, total toe graph, and Steer Ahead graph.

Two methods of adjusting front toe are available.

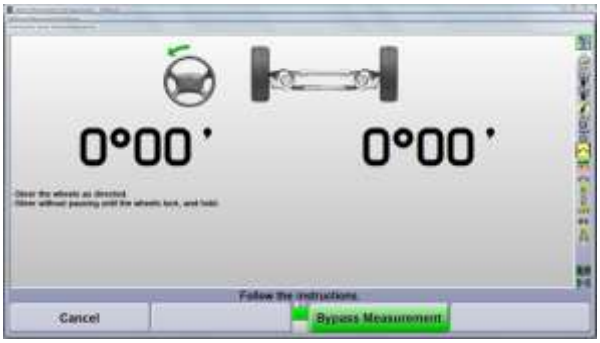
1. Center the steering wheel and lock it in place with the steering wheel holder. Adjust front individual toe using the bar graphs.
2. The WinToe® toe adjustment feature is available from the drop-down menu on the bar graphs, or by selecting “Make Additional Adjustments.



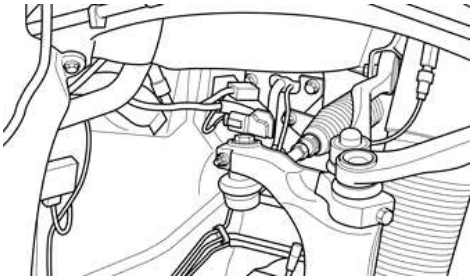
Follow the screen instructions to adjust toe without using a steering wheel holder.

Be sure to jounce the vehicle and equalize the tie rod rotation after making an adjustment.

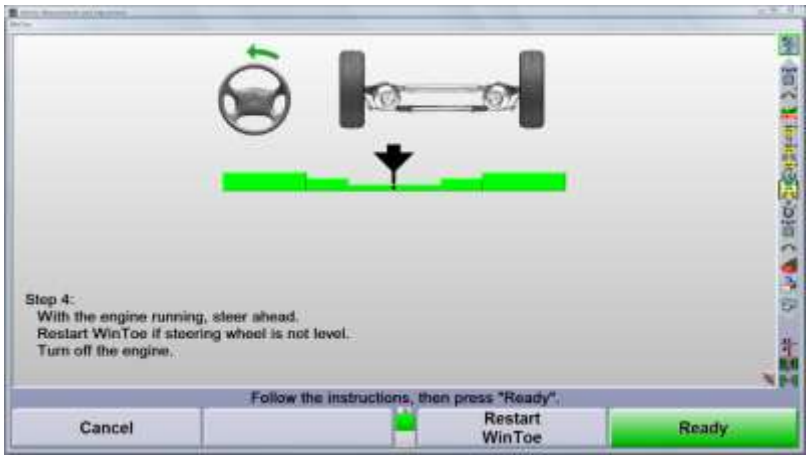
Better access to the toe adjustment may be obtained by selecting the "Steer Before Adjusting" softkey before making the adjustment.



Once selected, the front wheels may be steered and locked in the steered position to access the adjuster. This saves time and aggrevation whent the toe adjuster is in the upper wheel well.



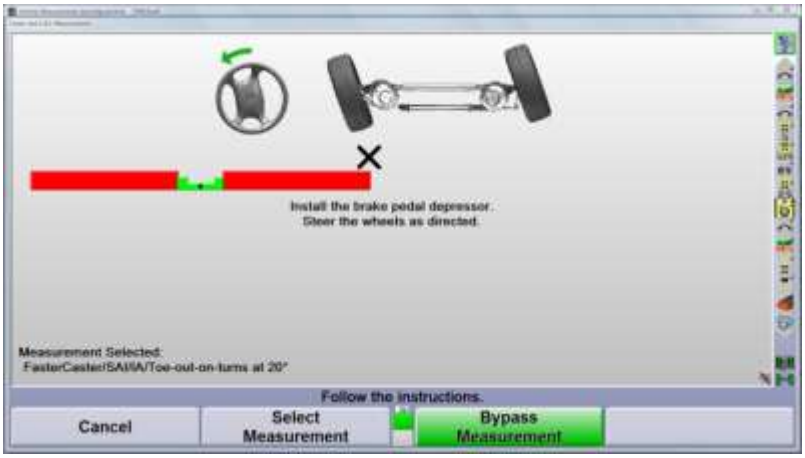
The final WinToe checks for proper steering wheel position. Steer the front wheels to place the arrow in the center of the bar graph. Check to see that the steering wheel is level.



If the steering wheel position is acceptable, press K4 "Ready." If the steering wheel position is unacceptable, press K3 "Restart WinToe".

2.4 Completing the Alignment Process

Second Caster Measurement



Measure "Caster/SAI/IA/Toe-out-on-turns at °20" again.

This step should not be bypassed.

Adjustments made to front camber and toe may influence the SAI, IA and Toe-out-on-turn angles.

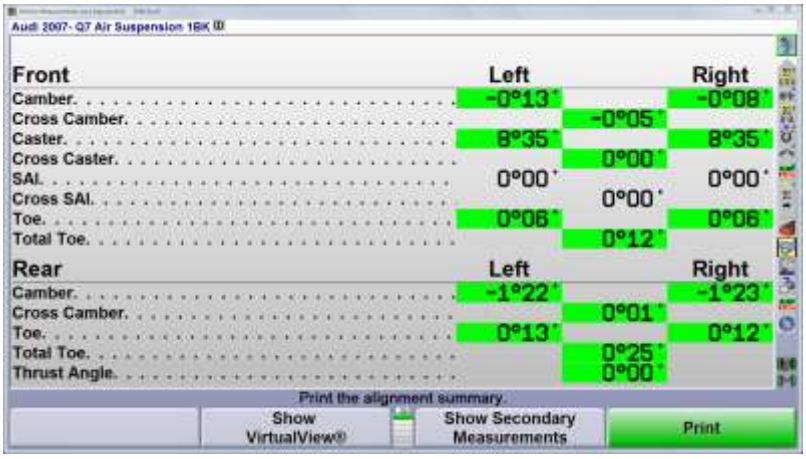
Measure Maximum Steer Angle (Re-measure)

The maximum steer angle measurement is also affected by adjustments to front toe angles. If a maximum steering angle specification is available, the program will automatically offer a maximum steer angle measurement. Proceed as instructed on the screen.

The final maximum steer measurement is made at this screen.

Final Measurements Overview

Alignment measurements saved as “After” measurements are shown here.



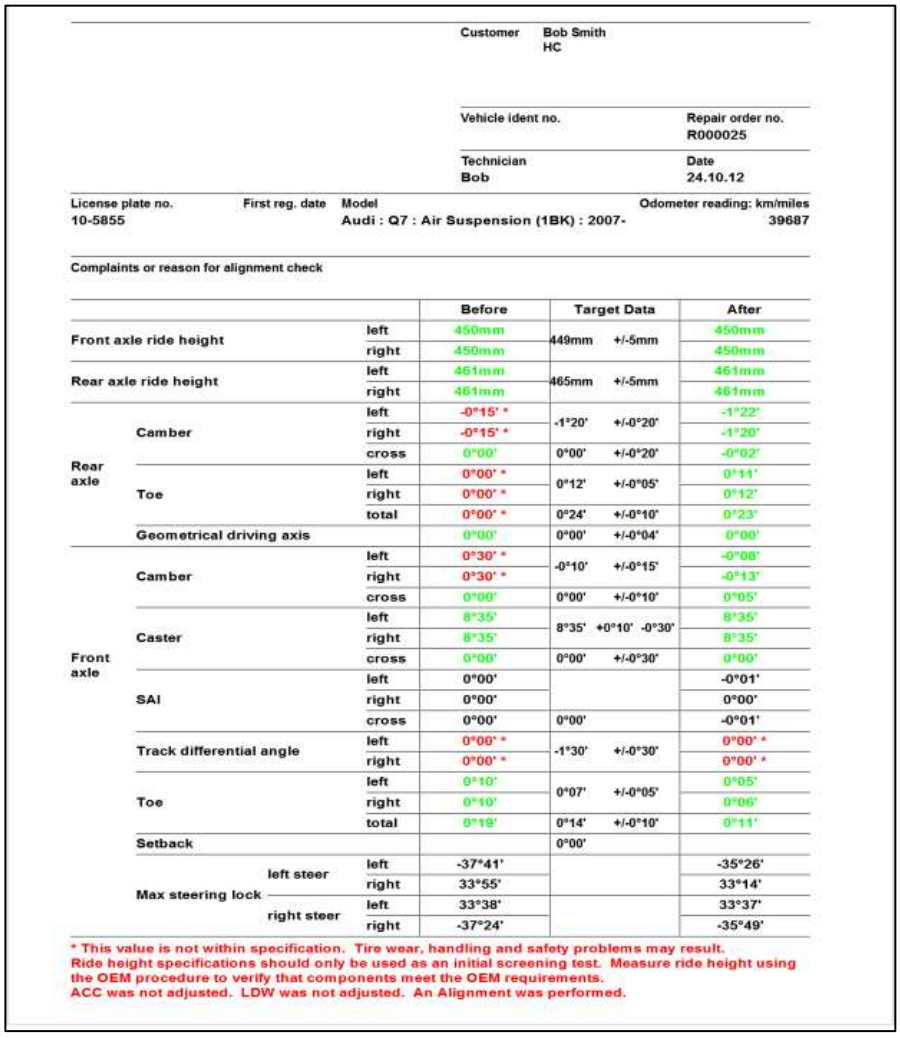
Alignment Printouts

This screen offers a variety of print formats. Highlight the desired format and select "Print."

Print Preview

Select "Print" to continue the printout process. A preview screen may be displayed.

Select "Print" one more time print the paper copy. The work order will be saved.



Customer: Bob Smith HC

Vehicle ident no.

Repair order no.: R000025

Technician: Bob

Date: 24.10.12

License plate no.: 10-5855 | First reg. date | Model: Audi : Q7 : Air Suspension (1BK) : 2007- | Odometer reading: km/miles: 39687

Complaints or reason for alignment check

			Before	Target Data	After
Front axle ride height		left	450mm	449mm +/-5mm	450mm
		right	450mm		450mm
Rear axle ride height		left	461mm	465mm +/-5mm	461mm
		right	461mm		461mm
Rear axle	Camber	left	-0°15' *	-1°20' +/-0°20'	-1°22'
		right	-0°15' *		-1°20'
		cross	0°00'	0°00' +/-0°20'	-0°02'
	Toe	left	0°00' *	0°12' +/-0°05'	0°11'
		right	0°00' *		0°12'
		total	0°00' *	0°24' +/-0°10'	0°23'
	Geometrical driving axis		0°00'	0°00' +/-0°04'	0°00'
Front axle	Camber	left	0°30' *	-0°10' +/-0°15'	-0°08'
		right	0°30' *		-0°13'
		cross	0°00'	0°00' +/-0°10'	0°05'
	Caster	left	8°35'	8°35' +0°10' -0°30'	8°35'
		right	8°35'		8°35'
		cross	0°00'	0°00' +/-0°30'	0°00'
	SAI	left	0°00'		-0°01'
		right	0°00'		0°00'
		cross	0°00'	0°00'	-0°01'
	Track differential angle	left	0°00' *	-1°30' +/-0°30'	0°00' *
		right	0°00' *		0°00' *
	Toe	left	0°10'	0°07' +/-0°05'	0°05'
		right	0°10'		0°06'
		total	0°19'	0°14' +/-0°10'	0°11'
	Setback			0°00'	
	Max steering lock left steer	left	-37°41'		-35°26'
		right	33°55'		33°14'
	Max steering lock right steer	left	33°38'		33°37'
		right	-37°24'		-35°49'

* This value is not within specification. Tire wear, handling and safety problems may result.
Ride height specifications should only be used as an initial screening test. Measure ride height using the OEM procedure to verify that components meet the OEM requirements.
ACC was not adjusted. LDW was not adjusted. An Alignment was performed.

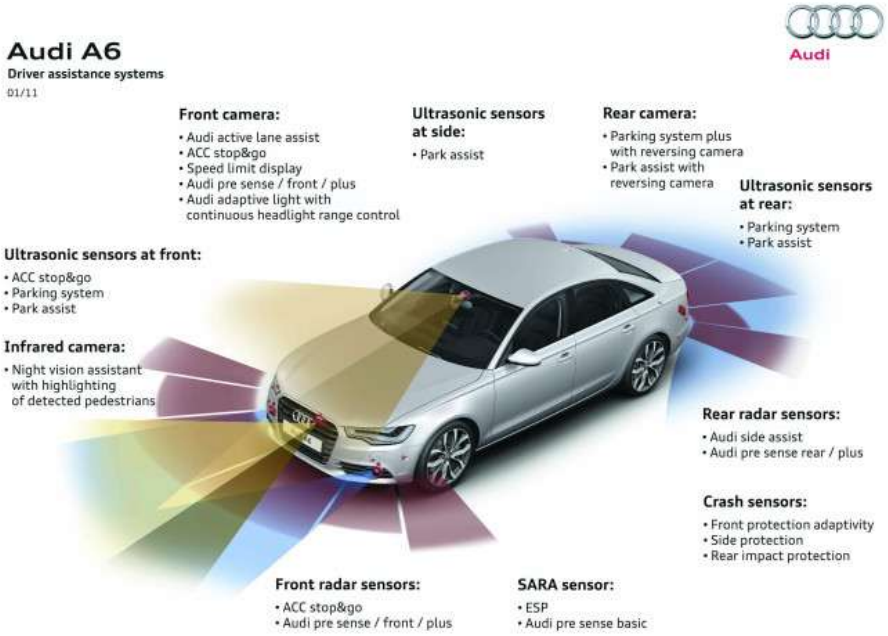
Saving Final Work Order

The work order will save automatically after printing the final measurements.

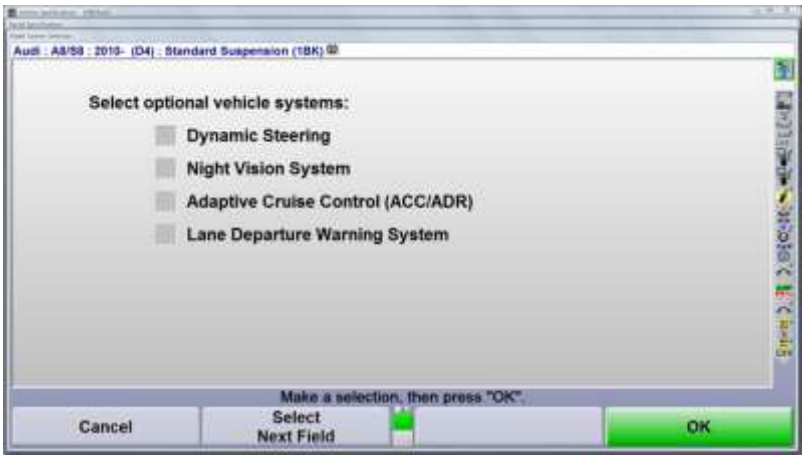
Conclude the alignment process by selecting the “Reset” softkey.

Post Alignment

Additional procedures may be required based on optional electronic systems available for the vehicle.

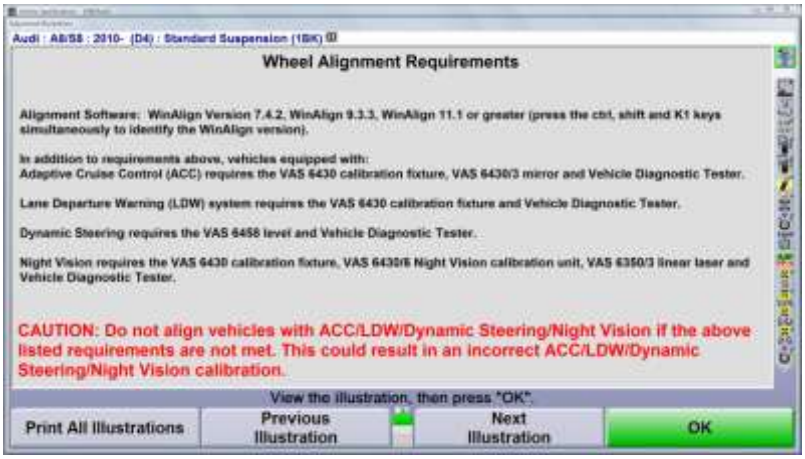


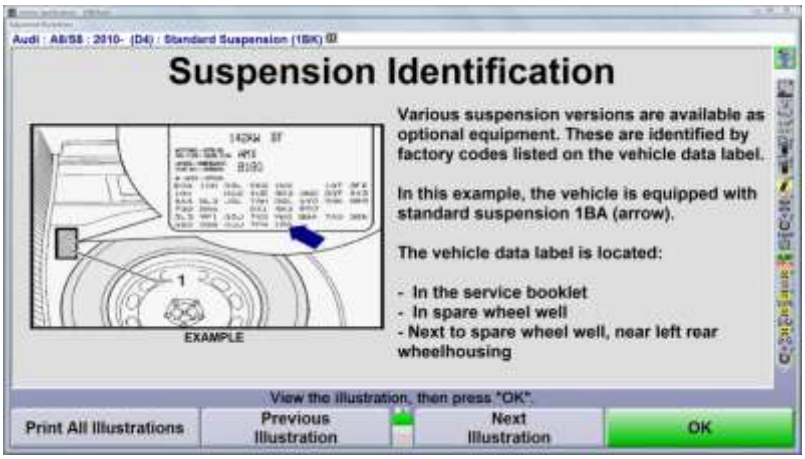
WinAlign's specification database is keyed to display the possible options after the vehicle model has been selected.

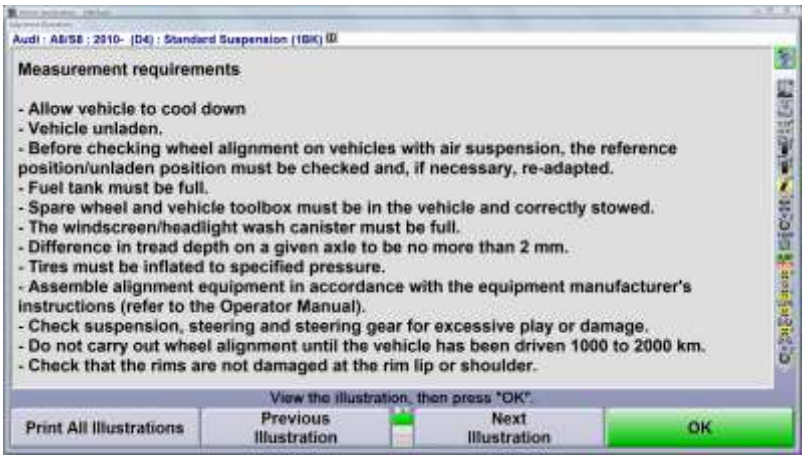


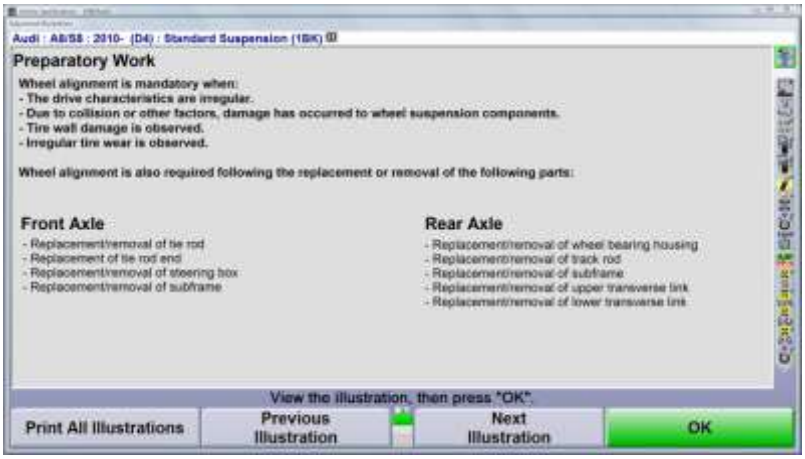
Place an "X" in the appropriate vehicle systems for the vehicle being aligned.

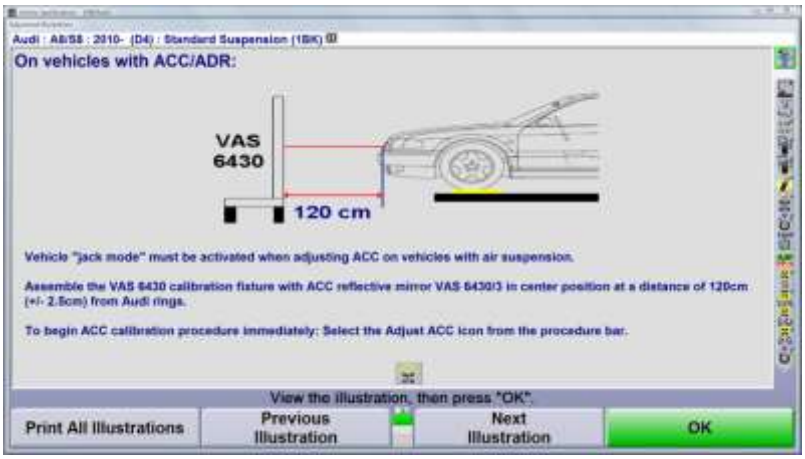
Descriptive message screens will follow describing the procedures and special tools required.

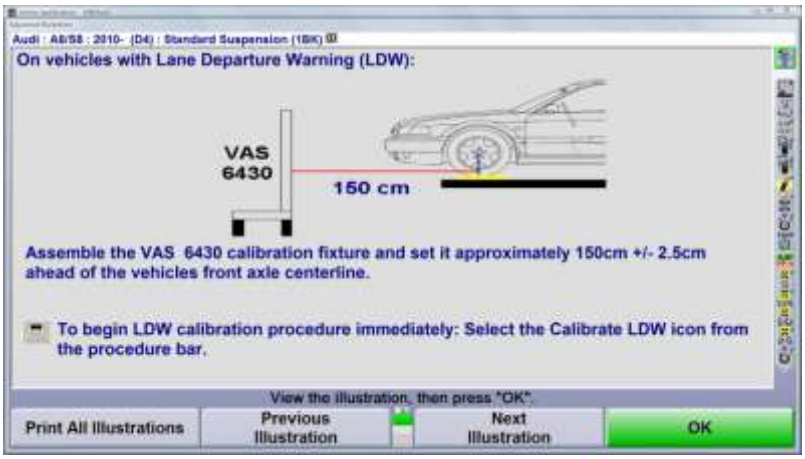

Audi : A8/S8 : 2010- (D4) : Standard Suspension (1BK)
Wheel Alignment Requirements
Alignment Software: WinAlign Version 7.4.2, WinAlign 9.3.3, WinAlign 11.1 or greater (press the ctrl, shift and K1 keys simultaneously to identify the WinAlign version).
In addition to requirements above, vehicles equipped with:
Adaptive Cruise Control (ACC) requires the VAS 6430 calibration fixture, VAS 6430/3 mirror and Vehicle Diagnostic Tester.
Lane Departure Warning (LDW) system requires the VAS 6430 calibration fixture and Vehicle Diagnostic Tester.
Dynamic Steering requires the VAS 6458 level and Vehicle Diagnostic Tester.
Night Vision requires the VAS 6430 calibration fixture, VAS 6430/6 Night Vision calibration unit, VAS 6350/3 linear laser and Vehicle Diagnostic Tester.
CAUTION: Do not align vehicles with ACC/LDW/Dynamic Steering/Night Vision if the above listed requirements are not met. This could result in an incorrect ACC/LDW/Dynamic Steering/Night Vision calibration.
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK


Audi : A8/S8 : 2010- (D4) : Standard Suspension (1BK)
Suspension Identification
EXAMPLE
Various suspension versions are available as optional equipment. These are identified by factory codes listed on the vehicle data label.
In this example, the vehicle is equipped with standard suspension 1BA (arrow).
The vehicle data label is located:
- In the service booklet
- In spare wheel well
- Next to spare wheel well, near left rear wheelhousing
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK


Audi : A8/S8 : 2010- (D4) : Standard Suspension (1BK)
Measurement requirements
- Allow vehicle to cool down
- Vehicle unladen.
- Before checking wheel alignment on vehicles with air suspension, the reference position/unladen position must be checked and, if necessary, re-adapted.
- Fuel tank must be full.
- Spare wheel and vehicle toolbox must be in the vehicle and correctly stowed.
- The windscreen/headlight wash canister must be full.
- Difference in tread depth on a given axle to be no more than 2 mm.
- Tires must be inflated to specified pressure.
- Assemble alignment equipment in accordance with the equipment manufacturer's instructions (refer to the Operator Manual).
- Check suspension, steering and steering gear for excessive play or damage.
- Do not carry out wheel alignment until the vehicle has been driven 1000 to 2000 km.
- Check that the rims are not damaged at the rim lip or shoulder.
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK


Audi : A8/S8 : 2010- (D4) : Standard Suspension (1BK)
Preparatory Work
Wheel alignment is mandatory when:
- The drive characteristics are irregular.
- Due to collision or other factors, damage has occurred to wheel suspension components.
- Tire wall damage is observed.
- Irregular tire wear is observed.
Wheel alignment is also required following the replacement or removal of the following parts:
Front Axle
- Replacement/removal of tie rod
- Replacement of tie rod end
- Replacement/removal of steering box
- Replacement/removal of subframe
Rear Axle
- Replacement/removal of wheel bearing housing
- Replacement/removal of track rod
- Replacement/removal of subframe
- Replacement/removal of upper transverse link
- Replacement/removal of lower transverse link
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK

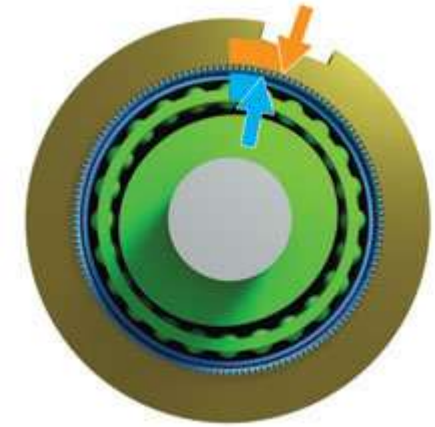

Audi : A8/S8 : 2010- (D4) : Standard Suspension (1BK)
On vehicles with ACC/ADR:
VAS 6430
120 cm
Vehicle "jack mode" must be activated when adjusting ACC on vehicles with air suspension.
Assemble the VAS 6430 calibration fixture with ACC reflective mirror VAS 6430/3 in center position at a distance of 120cm (+/- 2.5cm) from Audi rings.
To begin ACC calibration procedure immediately: Select the Adjust ACC icon from the procedure bar.
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK

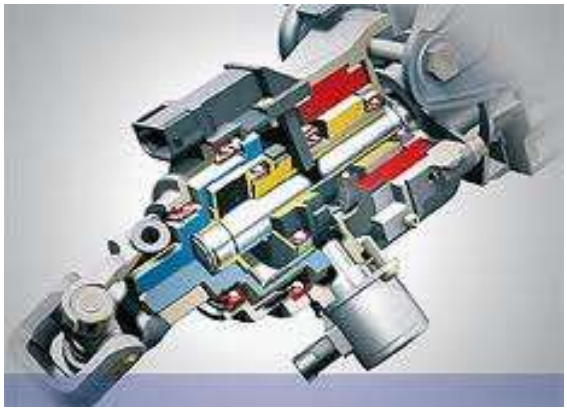

Audi : A8/S8 : 2010- (D4) : Standard Suspension (1BK)
On vehicles with Lane Departure Warning (LDW):
VAS 6430
150 cm
Assemble the VAS 6430 calibration fixture and set it approximately 150cm +/- 2.5cm ahead of the vehicles front axle centerline.
To begin LDW calibration procedure immediately: Select the Calibrate LDW icon from the procedure bar.
View the illustration, then press "OK".
Print All Illustrations
Previous Illustration
Next Illustration
OK

3.1 Dynamic Steering

The dynamic steering system varies the effective steering ratio by as much as 100% according to road speed.

The central component is a superposition gear integrated into the steering column and driven by an electric motor. This harmonic drive gearing modifies the steering ratio in response to the car's speed. When you're parking, one turn of the wheel covers the full range of motion. At highway speeds, the same range takes four turns.

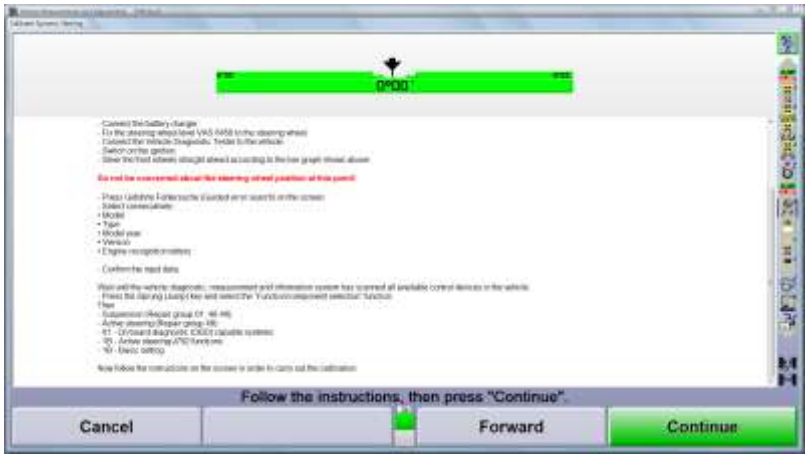




The dynamic steering and electronic stability systems work in tandem to provide a safe and stable driving experience. If electronic sensors determine that you're going too wide into a sharp turn, they will tighten up the steering ratio to put the vehicle back on course with a smaller movement of the wheel.

The system works three times as fast as other electronic stabilization systems. It even counter steers if necessary, since the system is designed to reduce under steer or over steer as necessary. When the brakes are applied on surfaces with different coefficients of friction, the system actively intervenes with stabilizing steering motion so that track offset, stopping distance and the amount of counter steering required from the driver are minimized.

Calibrating the Dynamic Steering requires alignment measurements to be active while working with the vehicle diagnostic tester and the VAS 6458 steering wheel level.



Follow the screen instructions. Do not assume the procedure is the same as last time.

1. Connect the battery charger
2. Fix the steering wheel level VAS 6458 to the steering wheel
3. Connect the vehicle diagnostic tester
4. Switch on the ignition
5. Steer the front wheels straight ahead according to the bar graph
6. Press "Guided Error Search" on the diagnostic tester
7. Input the data needed about the vehicle
8. Wait for the full scan to complete
9. Select Suspension\Onboard Diagnostics capable systems \ Active Steering functions \ basic setting
10. Follow the instructions on the screen to carry out the calibration

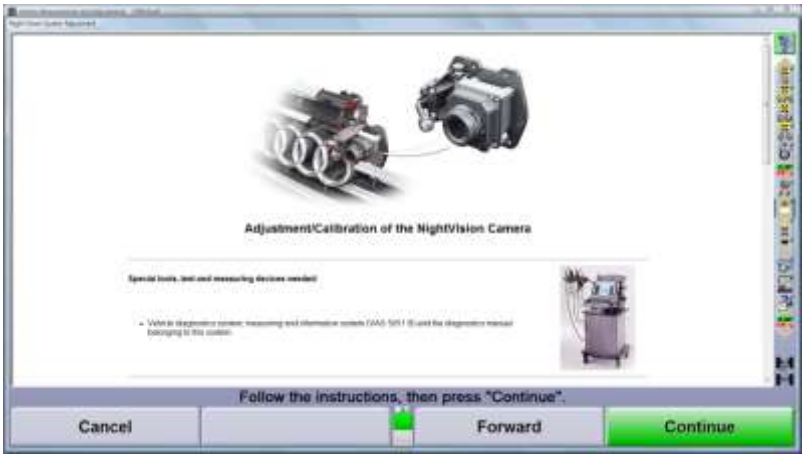
3.2 Night Vision Camera

Audi's night vision assistant uses a thermal imaging camera sitting behind the four rings at the front of the car. A computer transforms the information from the camera into images and displays them on the display located between the instruments.

The remote infrared technology looks ahead up to 984 ft, depending on the driven speed. Because the system reacts to the heat emitted by objects, people and animals are generally displayed conspicuously bright, while the cool road remains dark.

The program software specifically seeks human shapes, which it displays using yellow markings in the display. The person is marked red and a warning gong sounds if the person's movement leads the control unit to assume a hazard,

Adjustment/Calibration of the NightVision Camera



Special tools are required to calibrate the NightVision system.

- Vehicle diagnostic system VAS 5051 B or newer
- Adjustment device VAS 6430/1 or VAS 6430
- Linen Laser VAS 6350/3
- Calibration plate for NightVision VAS 6430/6

Follow the screen instructions thoroughly.

Be sure to use the scroll bar on the right side of the screen to read all of the instructions before pressing "Continue."

Two full pages of instructions are included.

Preliminary steps:

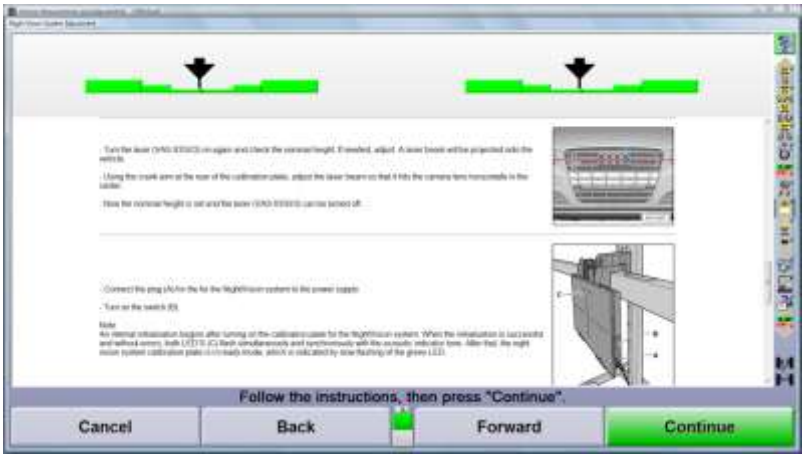
- The event memory has to be read and any errors corrected
- Visually inspect camera mounting, protection window and field of view
- Position the vehicle correctly on the alignment rack to have proper distance between vehicle and adjustment tool
- **NightVision has to be calibrated before ACC or ADR**
- Connect the battery charger
- Attach the vehicle diagnostic system to the vehicle (route cable thru window)

Follow the screen instruction to set up the adjustment device VAS 6430/1

A procedure for performing NightVision calibration without doing a full wheel alignment is also included in the instructions. Bypass these instructions if performing the calibration at the end of a wheel alignment.

Do not mount the front sensors on the fixture until instructed to do so by the display.

Once the fixture is set up and positioned correctly, continue to follow the screen instructions.



Pressing "Continue" from this display will advance the alignment program to the next procedure.

3.3 Adaptive Cruise Control

Vehicles with ACC (Adaptive Cruise Control) may require additional measurements, adjustments, and/or special tools to make the adjustments.

The Adaptive Cruise Control system is a radar-aided proximity control system, with stop & go ability. Two radar sensors are now located in the front end of the vehicle looking ahead.

The system is capable of regulating vehicle speed, distance from the vehicle ahead and bringing the vehicle stop.

The ACC retrieves data from up to 27 control units and operates closely together with the other driver assistance systems, such as the rear radar of the Audi side assist. This makes it possible for the avoidance system to detect complex scenarios and make anticipatory decisions in support of the driver.

As an example, the car ahead puts on its right turn signal and slows down because its driver wants to exit. The ACC can use the camera image from the Lane Assist and the Navigation system to know the exit locations. With this information, the ACC can determine the vehicle will be off the highway before any contact could occur between the two vehicles. A lesser avoidance system would react to the slowing vehicle assuming it is stopping. A8 continues on almost without change.

The ACC must be adjusted if any one or more of the following occur.

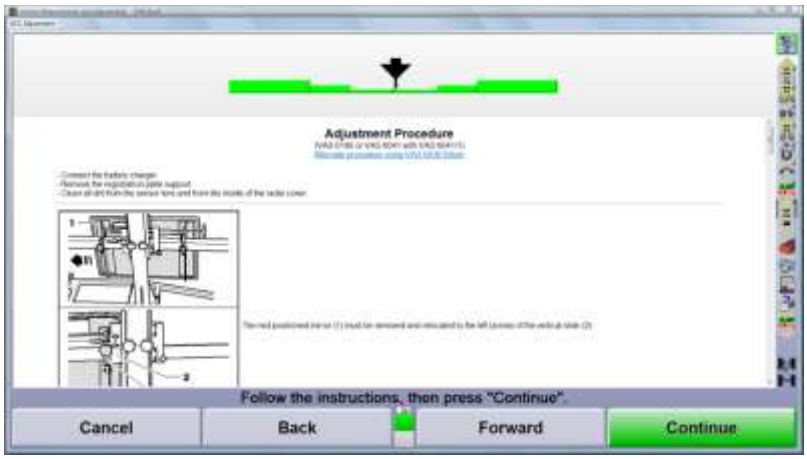
1. Rear toe is adjusted
2. Radar sensor is replaced
3. Front bumper or bumper mounting frame is repositioned or loosened
4. Front-end damage is incurred
5. The sensor is more than ± 0.8 0176 out of adjustment

Required special tools and fixtures include:

1. V.A.G. approved alignment system
2. VASS 6190 or VAS 6041 with VAS 6041/1
3. Vehicle Diagnostic Tester
4. VAS 5051/5a or 5053/5a

Press "Continue" to begin the adjustment procedure.

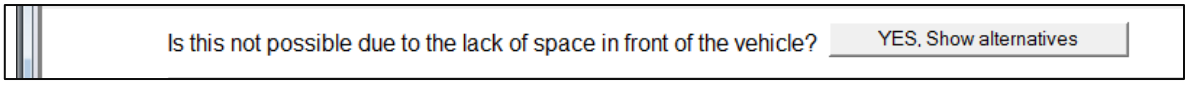
Alternate instructions are available for the VAS6430 fixture through the hyperlink.



Connect the battery charger, remove the access cover and clean all dirt off the sensor lens and inside of radar cover.

Install the mid positioned mirror to the left of the vertical slide. Continue to follow the instructions by scrolling down the screen.

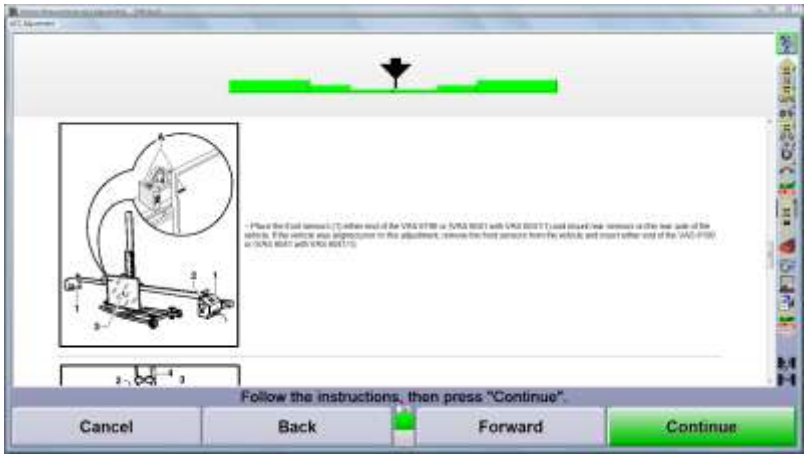
Alternatives are available should there not be sufficient room in front of the vehicle to properly position the fixture.



Do not move the wheel alignment sensors or unplug the cameras until told to do so.

The front DSP508 sensors or the portable cameras are used to position the VAS 6190 in line with the thrust angle of the vehicle.

Rear sensors may require compensation if the vehicle was rolled rearward to set the proper distance between the calibration fixture and the car's radar unit.



Continue to following the instructions by scrolling down the display using the scroll bar.

Attach the Diagnostic tester when instructed to do so.

Follow the aligner's screen instructions, which guide you through diagnostic tester screens.

Physical adjustment of the radar system is made by adjusting the mounting plate screws.

<u>The ACC adjustment is only stored when the Diagnostic tester procedure is displayed as complete.</u>

3.4 Lane Departure Warning / Lane Assist

The lane departure warning system (Audi's Lane Assist" helps the driver to stay in lane, thus preventing accidents. If the vehicle begins to wander out of its lane, the assistance system warns the driver by means of vibrations in the steering wheel. Audi lane assist does not actively intervene in the driving situation.

Lane Departure Warning detects lane markings by means of a camera on the front of the vehicle. The system is operational as soon as the camera detects road markings on both sides of the vehicle's lane. If the vehicle starts to drift towards one of the detected lane markings, vibrations in the steering wheel warn the driver that the vehicle is moving out of its lane. No warning is given if the driver is indicating with the turn signal. The system is designed for driving on motorways and main roads, and works at speeds above approx. 60 km/h.

WinAlign software will introduce LDW calibration at the correct time during the alignment procedure, if the Lane Departure Warning was selected from the optional equipment list.

Required special tools include:

- A VAG approved alignment system
- VAS 6430 calibration fixture
- Vehicle diagnostic tester
- VAS 5051/51 / 5052/5a

Using the scroll bar on the right side of the display, scroll downward through the instructions.

Prepare the vehicle:

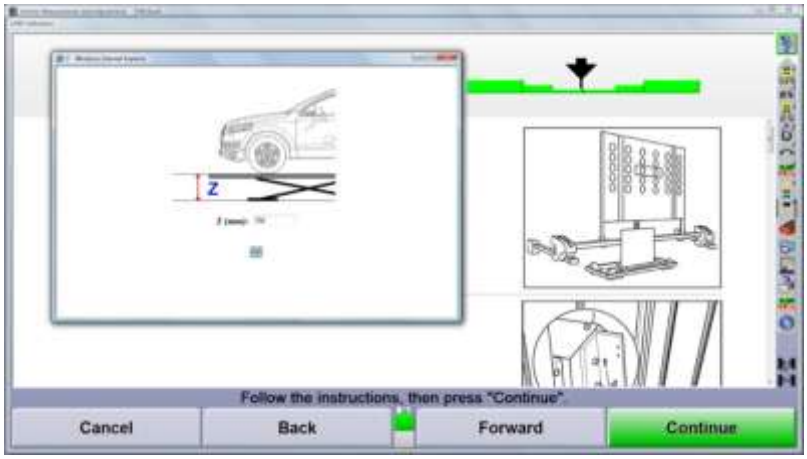
Lane Departure Warning (LDW) Calibration

Prepare vehicle

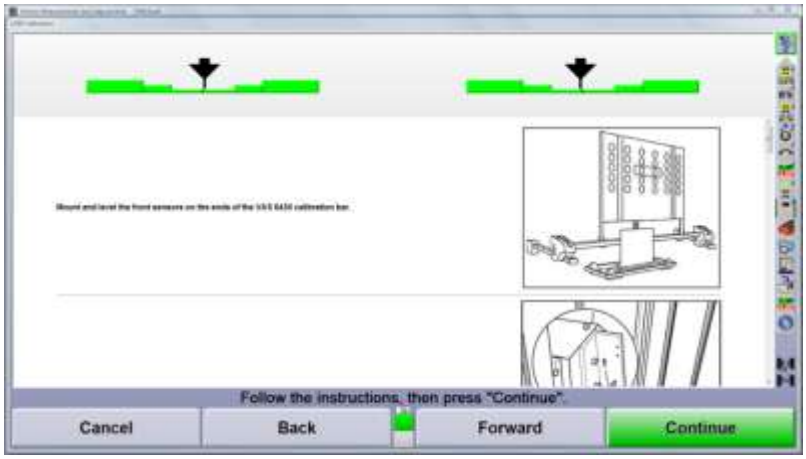
- Check tire pressure.
- Full fuel tank.
- Remove baggage and empty trunk except for spare wheel and tools.
- Attach battery charger.
- Switch off exterior lights.
- If vehicle is equipped with air suspension, set ride height to "normal" and lock air suspension into vehicle jack mode.
- Mount all four wheel adaptors to vehicle.
- Center steering and lock steering wheel.
- Connect tester cable (VAS 5052), close doors and feed tester cable through open window.
- Bring lifting platform to the lowest leveled height setting.

Measure Z height in millimeters. Z height is measured from lift rack turnplate surface to floor level.

Bring the lift to the lowest leveled height setting and measure the distance from the top of the turnplate to the floor. Enter the value in millimeters.



Mount the cameras or sensors on the calibrations bar.

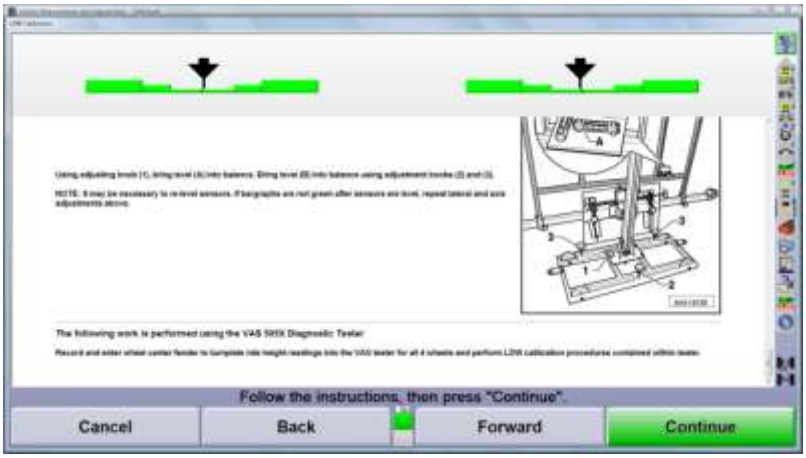


Adjust the calibration fixture as stated by the instructions on the screen. Be certain to scroll down through the instructions.

Adjust the calibration board to the height specified on the aligner's display.

Continue to follow the instructions by scrolling down the display.

Once the fixture is positioned correctly, the remainder of the process is performed using the diagnostic tester.

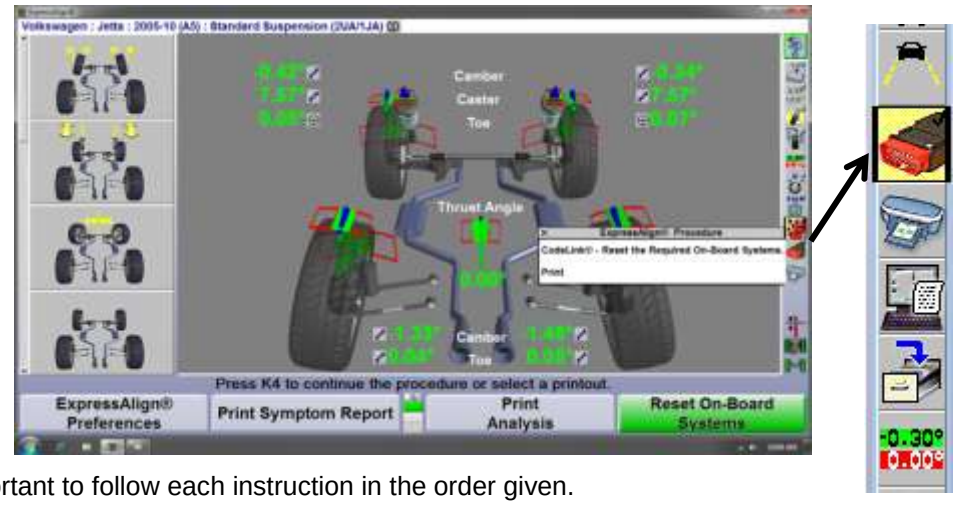


Record and enter wheel center fender to turnplate ride height for all 4 wheels. Perform LDW calibration procedures contained in the tester.

3.5 Steering Angle Sensor Reset

CodeLink is a tool made by Hunter Engineering to reset steering angle sensors (SAS) and related components using a simple, time-saving interface.

The icon for Hunter's CodeLink device will appear in the procedure bar if CodeLink is capable of resetting the SAS for the selected vehicle and is available with the alignment system.

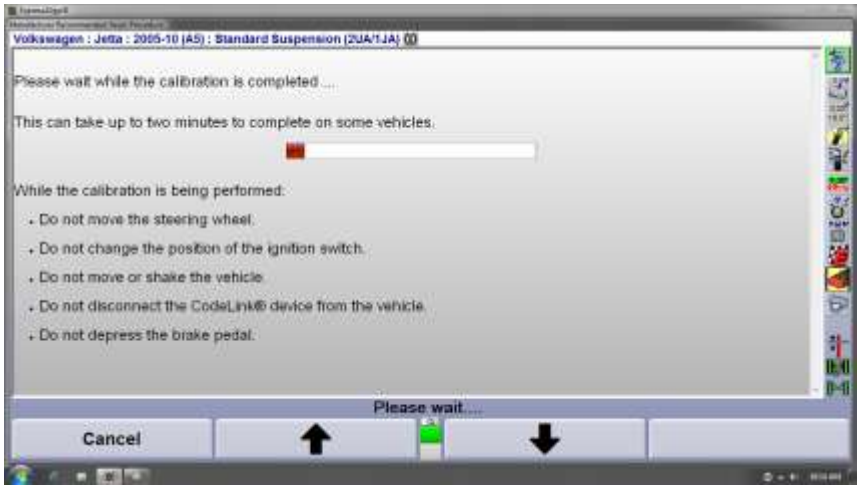


It is very important to follow each instruction in the order given.

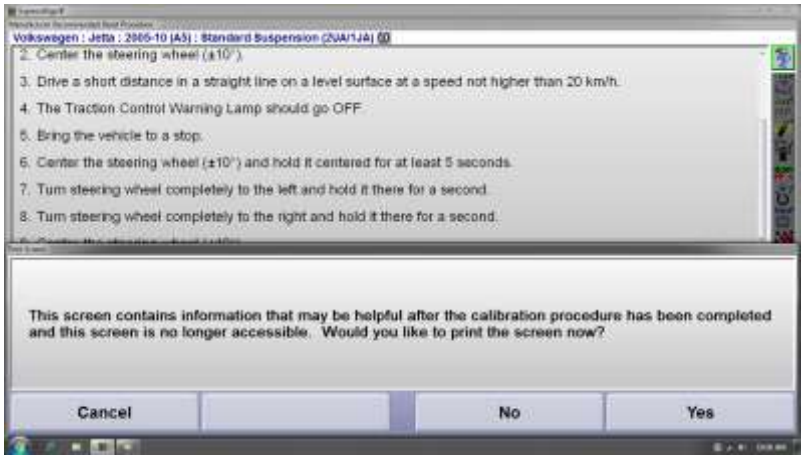
- Remove brake pedal depressor
- Place transmission in park'
- Turn the ignition switch to the ON position (battery charger must be connected)
- Connect the CodeLink tool to the vehicle's diagnostic connector
- Press K-4 "Continue"

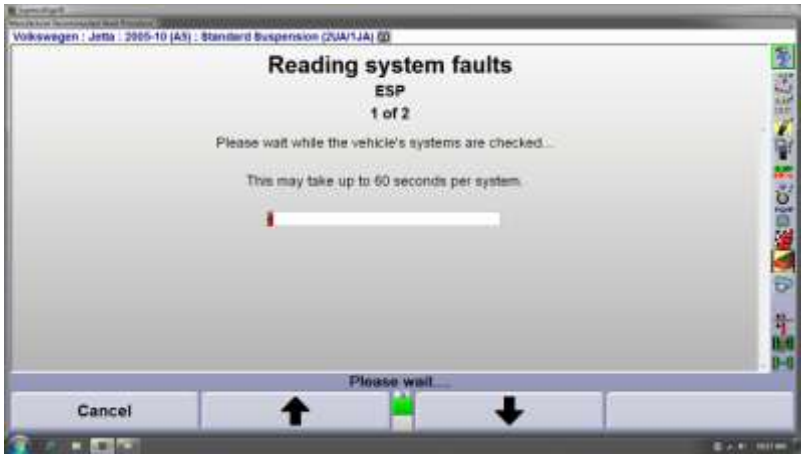
The CodeLink tool will now attempt to communicate with the vehicle's on-board computer.

Follow the instructions as listed on the display.

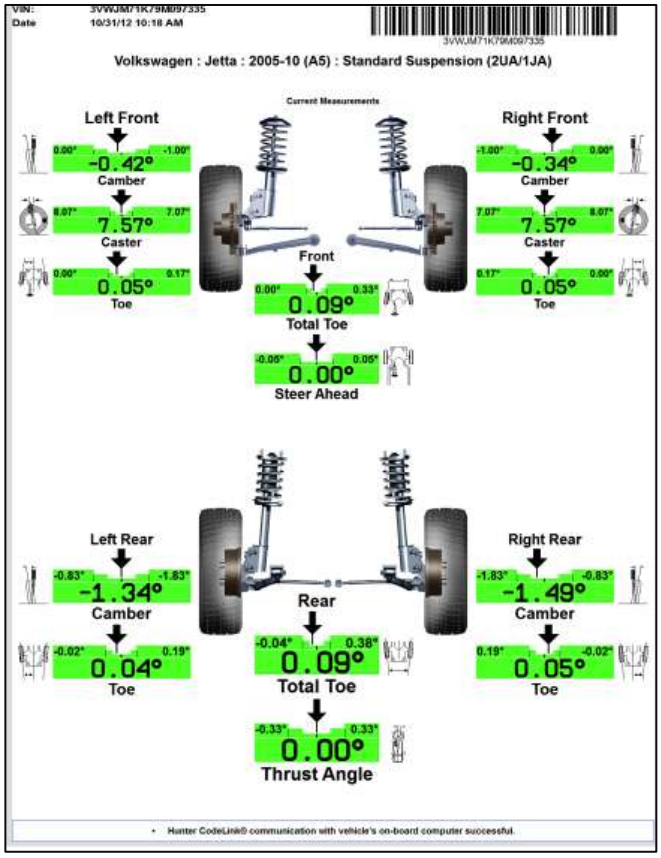


Do not disturb the vehicle during the calibration process.

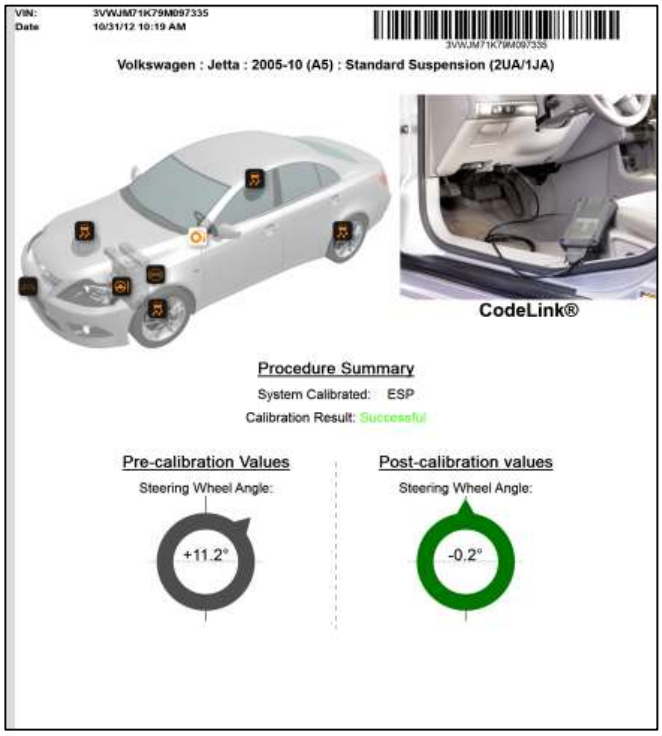

Volkswagen : Jetta : 2005-10 (A5) : Standard Suspension (2UA/1JA) 60
2. Center the steering wheel (±10°).
3. Drive a short distance in a straight line on a level surface at a speed not higher than 20 km/h.
4. The Traction Control Warning Lamp should go OFF.
5. Bring the vehicle to a stop.
6. Center the steering wheel (±10°) and hold it centered for at least 5 seconds.
7. Turn steering wheel completely to the left and hold it there for a second.
8. Turn steering wheel completely to the right and hold it there for a second.
This screen contains information that may be helpful after the calibration procedure has been completed and this screen is no longer accessible. Would you like to print the screen now?
Cancel
No
Yes


Volkswagen : Jetta : 2005-10 (A5) : Standard Suspension (2UA/1JA) 60
Reading system faults
ESP
1 of 2
Please wait while the vehicle's systems are checked...
This may take up to 60 seconds per system.
Please wait...
Cancel


Volkswagen : Jetta : 2005-10 (A5) : Standard Suspension (2UA/1JA) 60
1. Turn the ignition completely off (on some vehicles, this may require removal of the key from the ignition).
2. Disconnect the CodeLink® tool from the vehicle's diagnostic connector.
Press "Continue" to proceed.
Restart Procedure
Print CodeLink® Report
Continue



Available printouts confirming SAS reset.

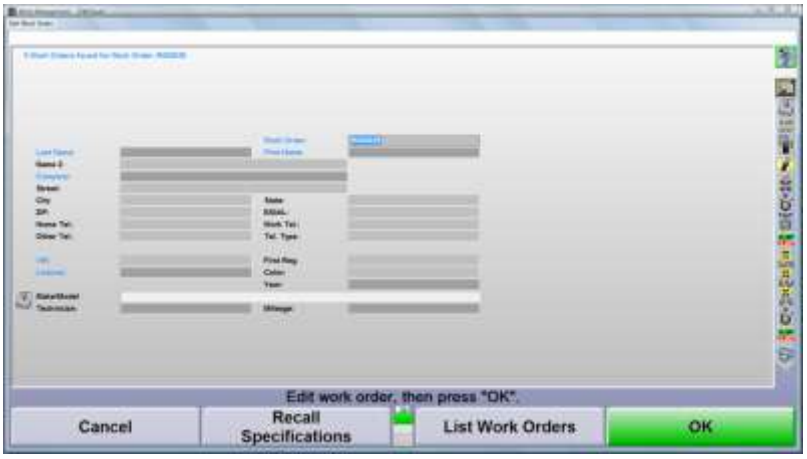


Program Details

4.1 Work Management

Using the Work Management program provides the following advantages:

1. Storage of customer information for later recall
2. Storage of customer's vehicle information for later recall
3. The ability to store more than one vehicle per customer
4. Storage of "Before" and "After" wheel alignment measurements
5. Record of customers tire pressure and tread depth
6. Record of factory or non-factory tire
7. Ability to recall work orders electronically



The dark grey areas indicate mandatory information. This usually includes:

- VIN #, Work order number, Mileage
- Technician performing the alignment
- Last and First name of customer
- Customer or Company Address
- Work and Home Phone number

The cursor indicates the position where a letter or number will appear.

Press **Enter** or **Tab** to advance to the next field. Press **Shift** and **Tab** to back up to the previous field. The mouse may be used to move between fields.

Press the **Backspace** key to delete the last character entered.

Press the right or left cursor arrow key to move the cursor.

Press **Del** to remove the character to the right of the cursor.

To insert a character in the middle of a word, move the cursor to the character before the position and press the character to be inserted.

Saving Current Work Order

Press “Work Management” on any primary screen to display the “Work Management” primary screen.

Press “Save Current Work Order.” The work order with its associated customer and vehicle identification will be stored on the hard drive.

The “Save Current Work Order” softkey will also appear at the end of the alignment measurement procedure and on the “Print” screen.

Recalling a Work Order for Review or Print

Start on the Work Management screen.

Select the "List Work Order" softkey

Use the search function to find the correct work order / customer

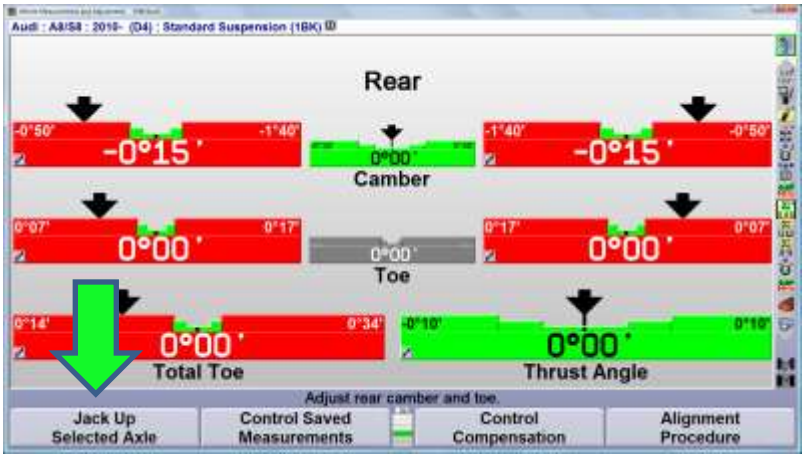
Highlight the correct work order / customer

Expose all the softkeys by clicking on the magnifying glass between the K2 and K3 keys

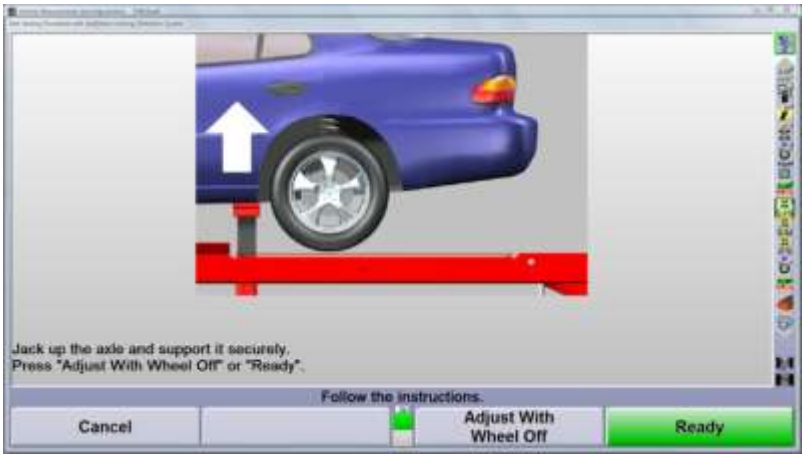
Select "Show Before", "Show After", or print the alignment

4.2 Raise Selected Axle

Front camber, front caster and rear camber may be adjusted with the tires lifted off the runway using the "Jack Up Selected Axle" softkey available on the fourth row.



Jack up the vehicle as indicated and press K4 "Ready".



Adjust the camber or caster angle as needed.

Press K1 "Lower Selected Axle" when adjustment is finished.

4.3 WinToe®

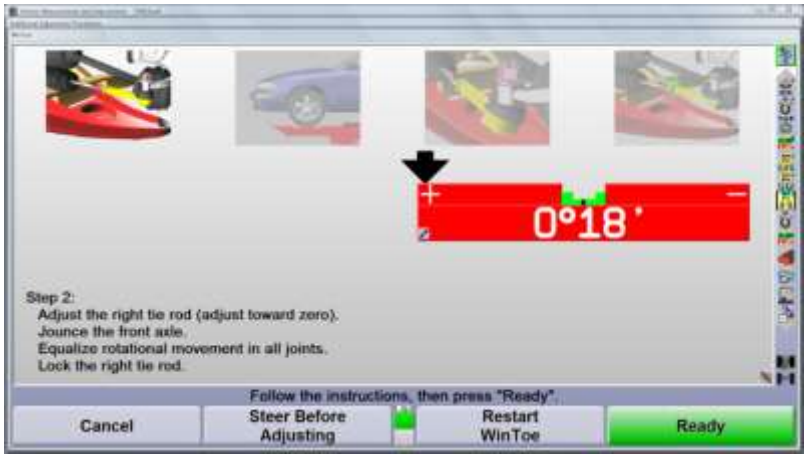
WinAlign®'s patented WinToe® program has been enhanced with the addition of WayUp and WayOut Wintoe®, which were introduced with WinAlign® 10.0.

WayUp WinToe® is a seamless software program which extends the vertical range of the cameras. This allows the alignment lift to be raised higher without moving the cameras or losing front toe measurements.

WayOut WinToe® allows the front wheels to be turned during a front toe adjustment while maintaining accurate toe values.

Enter WinToe® from the "Make Additional Adjustment" softkey or through the context sensitive drop-menu obtained by clicking on the steering wheel icon on the front toe bar graphs.

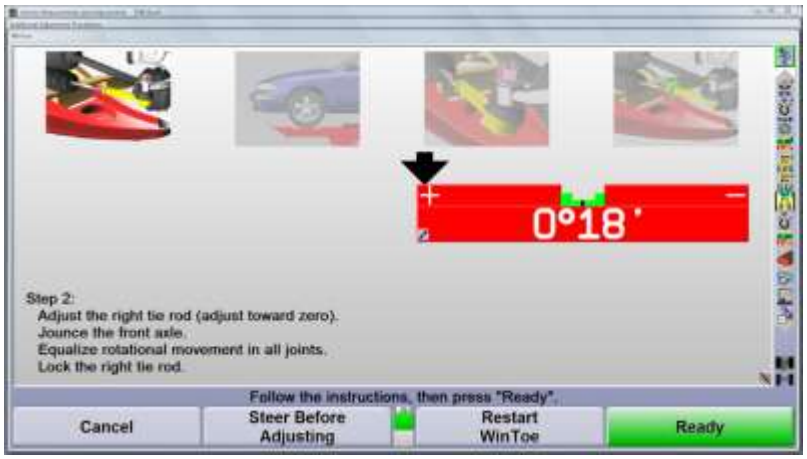
NOTE: Vehicles requiring the steering gear to be centered during the front toe adjustment should not use the WayOut WinToe® feature.



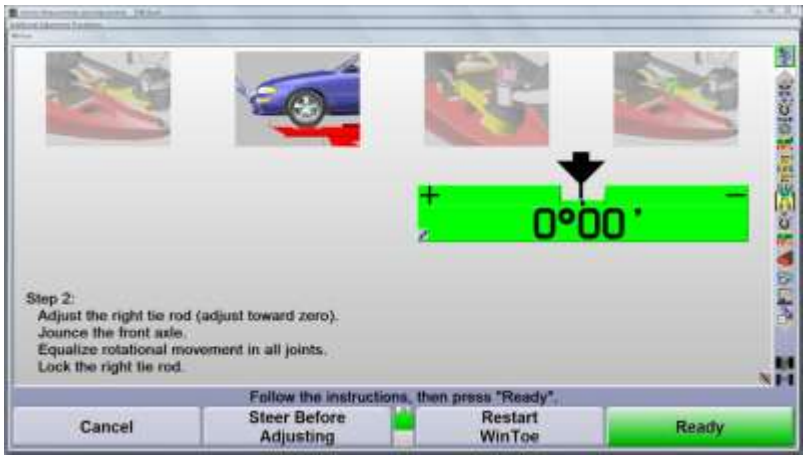
Select K2 "Steer Before Adjusting" to use the WayOut WinToe® program.

Follow the instructions on the display. Securely lock the front wheels in place after steering to the desired position. This may require using the ignition lock.

Press K4 "Ready" when the front wheels are secure.

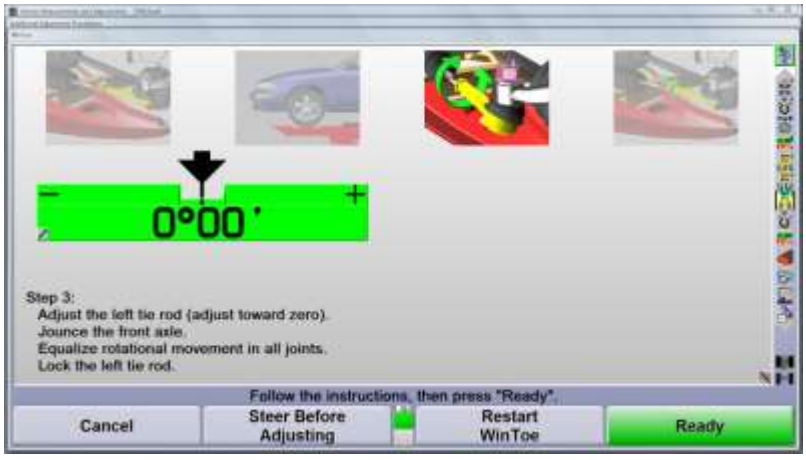


The toe adjustment display is shown with the same required change displayed before the front wheels were steered. Adjust toe and follow the instructions. Press K4 "Ready" when ready to adjust the left tie rod.



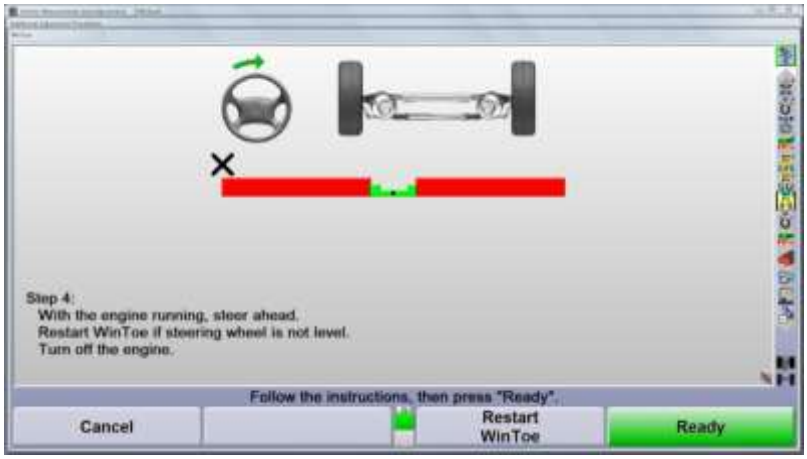
Steer the wheels to the position desired to access the left tie rod adjuster.

Lock the front wheels in place and press K4 "Ready".

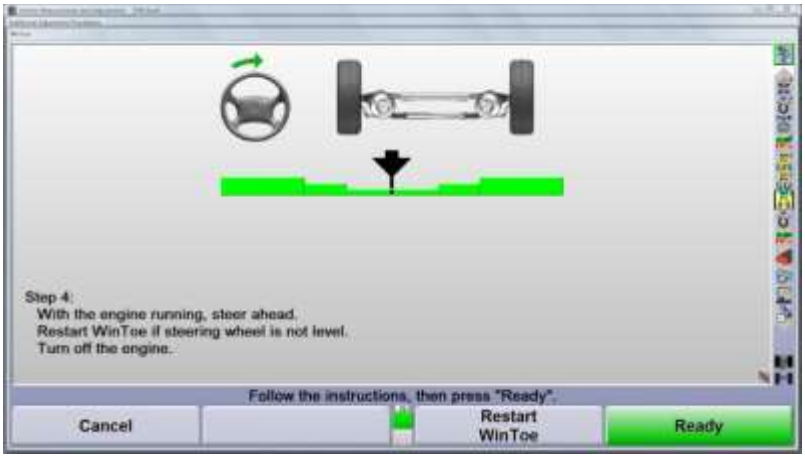


Adjust the left tie rod and follow the instructions displayed on the screen.

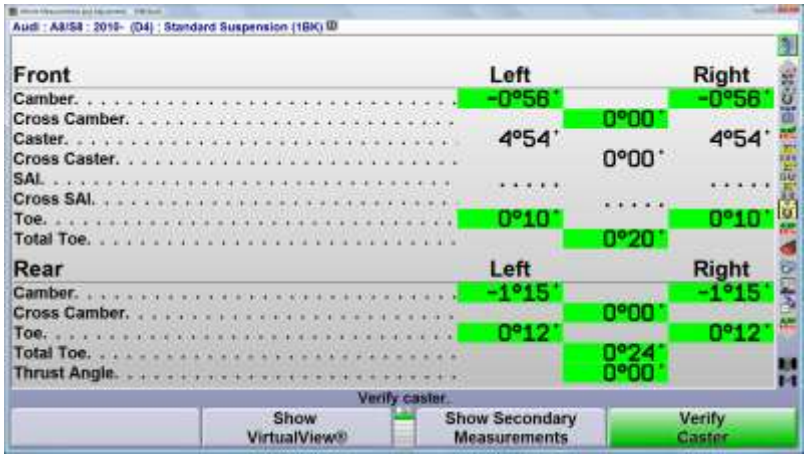
Press K4 "Ready" when the adjustment is complete and the instructions on the screen have been followed.



Verify the steering wheel is centered when the arrow is in the center of the bar graph.



Continue the remainder of the alignment process by pressing K-4.



VAG Accessories

V.A.G. Mandatory Tools

P/N	Description
20-1789-1	External tire clamp adaptor (Required for Audi Dealers). Compatible only with DSP508, DSP600 or HS421 self-centering adaptors175-321-1 or 175-325-1. (set of four)
V.A.G. Alignment Tool # 1925	Tool used to adjust the Front Axle Toe Curve when using Hunter Engineering Company Racks. *This tool must have been modified per Hunter kit 20-1194-1.* **This tool must be ordered from VWoA.**
VAS6430	LDW/ADR/ACC Calibration bar and fixture is used to perform Adaptive Cruise Control (ACC) and or Lane Departure Warning (LDW) calibration on Audi vehicles equipped with these systems. It can also be used to perform Automatic Distance Regulation (ADR) system adjustments on VW models. **This tool must be ordered from VWoA.**

20-1835-1

VAS6430 (LDW/ADR/ACC)

Radar Alignment System Kit 20-1835-1 is standard with all of the VAS6292 equipment packages.
The Radar Alignment System Kit is used with VAS6430 calibration bar and fixture for LDW/ADR/ACC adjustment.

P/N	Alignment Accessories	
30-418-1	Plus Cordless Remote Indicator - New style cordless remote indicator for WinAlign WA300 and WA400 and Series 811 Aligners. Records tire pressure, tread depth, ride height and measures tire temperature and frame angle. Includes Tire Temperature Probe. Requires XF2 Pod Kit, 20-2072-1 and WinAlign® 9.0. XF2 Pod shipped standard with DSP500 Cordless Sensors after 6-27-06.	 *30-418-1*
20-2072-1	XF2 Pod Kit - XF communication for use with Plus Cordless Remote Indicator, 30-418-1-1 and Icon Cordless Remote Indicator, 30-421-1. This XF Pod is not compatible with DSP500 Cordless Sensors built prior to 6-27-06. XF2 Pod shipped standard with DSP500 Cordless Sensors after 6-27-06.	 *20-2072-1*
20-1487-1	Pair of 50mm electronic turnplates with protective covers (turnplates only)	 *Electronic Turnplates*

P/N	Alignment Accessories	
20-2336-1	Pair of PowerSlide Low Friction Turnplates. For use with previous vintage of VAG approved RX lift with PowerSlide or Inflation Station. (Included in new –PS and –IS rack groups)	 *PowerSlide Low Friction Turnplates*
20-2533-1	Pair of Stainless steel turnplates - low friction (Included in new basic rack groups)	 *Stainless Steel Turnplate*
20-1792-1	Increases maximum wheel size that the self-centering adaptor will fit by 3 ½ inches. Compatible only with DSP508, DSP600 or HS421 self-centering adaptors 175-321-1 or 175-325-1. (set of sixteen, covers 4 wheel adaptors)	 *20-1792-1*
20-1789-1	External tire clamp adaptor Compatible only with DSP508, DSP600 or HS421 self-centering adaptors 175-321-1 or 175-325-1. (set of four)	 *20-1789-1*
30-419-1	Icon Remote Indicator - New style remote indicator for WinAlign WA300 and WA400, Series 111, 211, 311, 411, 511, 611, 811 or PA100 Aligners.	 *30-419-1*
30-421-1	Icon Cordless Remote Indicator - New style cordless remote indicator for WinAlign WA300 and WA400, Series 811, 611 with USB support and PA100 Aligners. Requires XF2 Pod Kit, 20-2072-1. XF2 Pod shipped standard with DSP500 Cordless Sensors after 6-27-06.	

Glossary

Alignment	The process of measuring and positioning all wheels attached to a common chassis
Angle	Two intersecting lines
Camber:	The inward or outward tilt of the top of the wheel as viewed from the front
Camber roll:	The change in front camber in a turn due to caster
Caster:	The forward or rearward tilt of the steering axis as viewed from the side
Degree:	A unit of measurement used to describe an angle.
Directional stability:	The tendency for a vehicle to maintain a directed path.
Dog tracking:	The appearance given when the thrustline is not parallel with the centerline of the vehicle.
Drift (lead):	The tendency of a vehicle to steer away from a directed course. Less severe than a pull, constant pressure at the steering wheel is not needed to maintain straight ahead.
Geometric centerline:	A line drawn through the midpoint of both front wheels and both rear wheels.
Included angle:	S.A.I. plus camber
Individual toe:	The angle formed by the intersection of an individual line drawn through the plane of one wheel and the centerline.
Max Steer Angle	The maximum steer angle left and right of center for both front wheels
O.E.M.	An acronym used instead of Original Equipment Manufacturer.
Pivot point:	A component used to permit the steering knuckle to turn i.e. ball joint, strut bearing, king pin
Pull:	The tendency of a vehicle to steer away from a directed course. A constant pressure is maintained by the driver at the steering wheel to travel straight ahead.
Rack and pinion steering:	A steering system design that utilizes a pinion gear meshed with a rack gear to transmit steering forces to the spindle.
Raised Toe Adjustment	A procedure used to adjust the angle of the tie rods. The purpose is to reduce or eliminate bump steer.
Returnability:	The tendency of the front wheels to return to the straight ahead position from a steered position.

Road isolation	The ability of the vehicle to absorb or dissipate road vibrations.
Sensor compensation	A process which measures lateral and axial runout to determine the location of the center of the hub/axle
Setback	The angle formed by the geometric centerline and a line drawn perpendicular to the front axle.
Softkey	A graphic menu icon used to operate WinAlign® software 
Steering Angle Sensor	An electro-mechanical device designed to measure steering wheel angle and rate of turn
Steering axis	A line drawn between the upper and lower pivot points of the spindle.
Steering arm	A steering component that connects the outer tie rod to the spindle. The angle of the steering arm to the wheel's axis determines turning angle.
Steering Axis Inclination	An angle formed by a line drawn through the upper and lower pivot points of the steering knuckle and a vertical
S.A.I.	An angle formed by a line drawn through the upper and lower pivot points of the steering knuckle and a vertical line drawn through the lower pivot point, as viewed from the front.
Slip plates	A free floating surface designed to allow a rear suspension to relax
Suspension:	An assembly used to support weight, dampen shock, and maintain tire contact and proper wheel to chassis position.
Thrust angle:	The angle formed between thrustline and geometric centerline.
Thrust line:	The bisector of rear toe, also described as a line drawn in the direction the rear wheels are pointed.
Total toe (angular):	The angle formed by the intersection of lines drawn through both wheels of a given axle.
Total toe (linear):	The difference in measurements taken across the front of the tires versus a measurement taken across the rear of the same tires.
Tracking:	The interrelated paths taken by the front and rear wheels.
Turning angle:	The angle of a wheel during a turn when the opposing front wheel is steered to a specific reference angle
Wander:	The tendency of a vehicle to drift to either side of a directed course.
WinToe®	A procedure used to adjust front toe patented by Hunter Engineering Co.