

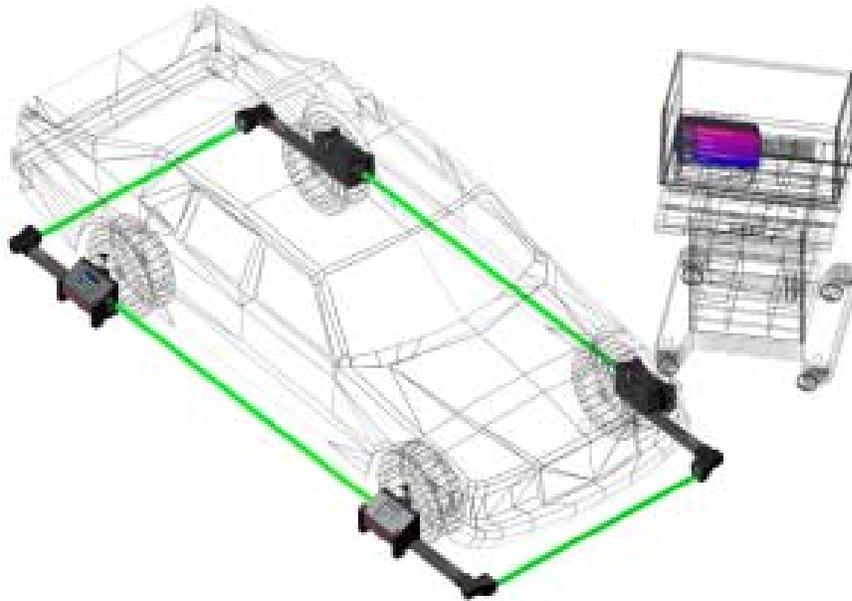


Visualiner Series

SV8 Surround Sensor Edition

Owner's Manual Supplement

** Includes VAG Software Operation Instructions*



SURROUND•SENSOR™

Form # 5199-4

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INTRODUCTION

Visualiner SV8 Surround Sensor Edition

John Bean Company has designed a system that uses 8 toe angle measurement sensors to produce high accuracy vehicle dimensioning, continuous calibration checks, and other powerful features. The SV8 Surround Sensor Edition measuring heads and alignment process is standard on some models and available as an option on other models.

This manual is a supplement designed to give information about the Visualiner Series SV8 Surround Sensor Alignment system. The alignment process is very similar to the standard alignment process. Please refer to the Visualiner Series Operation Guide for complete details on how to use the Visualiner software.

The SV8 Surround Sensor model hardware differentiates from a standard Visualiner only in the rear measuring heads. The rear heads contain an additional toe measurement system -- rear cross toe -- not found on standard 6 sensor systems. This allows for additional measurement capabilities and added features which are explained in detail on the following page.

- > Direct measurement of rear toe and thrust angle for the highest accuracy possible
- > Fast measurement of rear setback
- > Expanded vehicle dimension measurement capabilities including wheelbase and track width differences
- > Software monitors head level condition and prompts operator when a head has moved
- > The SV8 software is able to monitor system calibration during each alignment, and notify the operator when a condition exists that may cause inaccurate wheel alignments.

The John Bean SV8 system is available in either corded or cordless versions. For additional information on the cordless heads, see the Visualiner Cordless Heads Option Supplement included in the shipment.

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SV8 Surround Sensor Edition Features

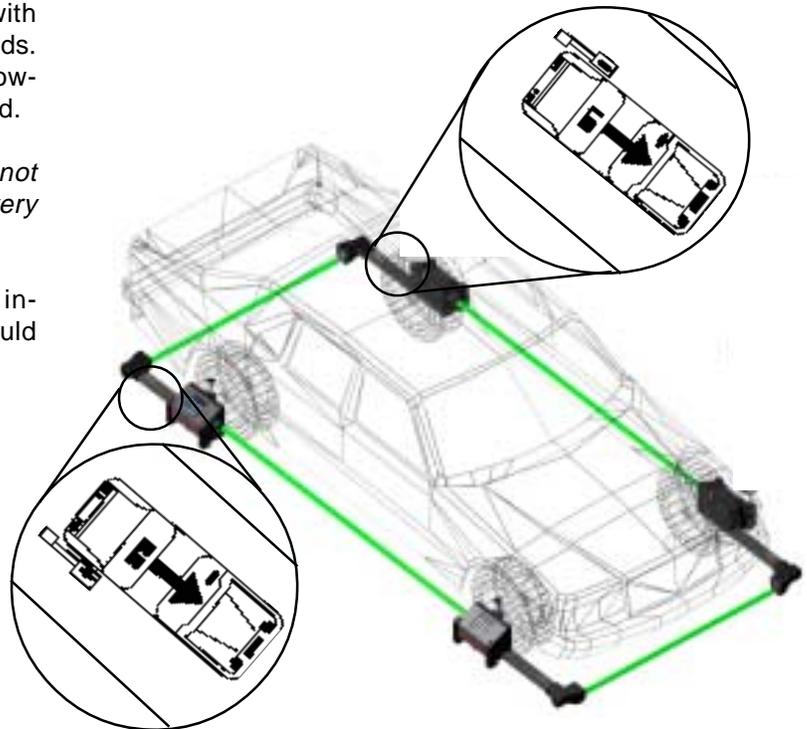
The John Bean SV8 technology creates additional features that expand the aligner's measurement capabilities and ensure each alignment is performed with the highest possible accuracy. These features include:

- 1) Eight Sensor Optical Toe System
 - A. Cross toe sensors added to the rear measuring heads.
 - B. Allows direct rather than calculated measurement of rear toe and thrust angle.
- 2) Continuous Calibration Check
 - A. Presence of 8 sensors allows the software to check for correct calibration during each alignment.
 - B. Any significant change is detected and the operator is notified the unit is out of calibration.
 - C. When combined with the easy to use Customer Calibration Kit, the Visualiner owner is assured of quality results and satisfied customers.
- 3) Level Head Monitoring
 - A. Level measuring heads are an essential condition for optimum accuracy setting toe.
 - B. System automatically checks for head level prior to level sensitive measurement display screens and will not allow reading until heads are level.
- 4) Wheel Base and Track Width Difference Calculation
 - A. System calculates and graphically displays vehicle chassis differences.
 - B. This is a big help for troubleshooting handling problems and potential body shop repair needs.
 - C. Can be programmed into the normal alignment flow or called upon as desired.
- 5) Easy Rear Setback Measurement
 - A. Performs rear setback measurement with no extra steps.
- 6) Toe angles are displayed even if one of the toe beams is blocked.

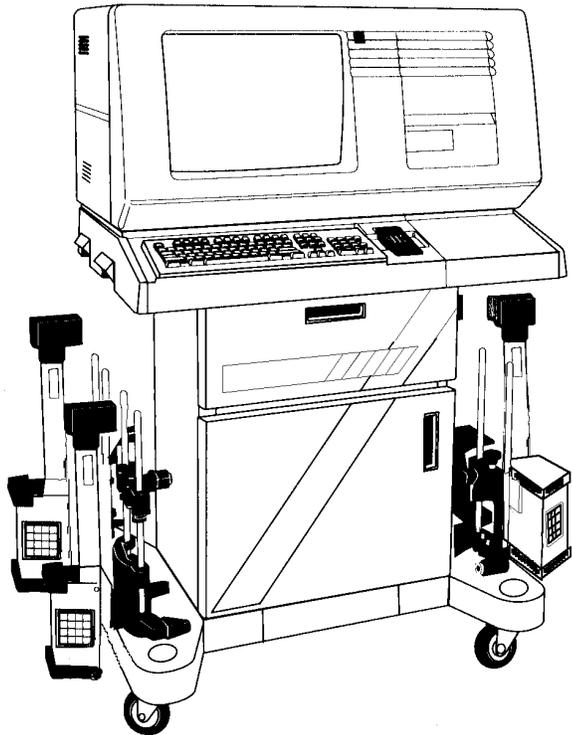
The Surround Sensor Edition comes with what appears to be two sets of similar heads. Look for the label on the boom tubes showing where the rear heads must be placed.

Caution: *The front and rear heads cannot be interchanged even though they look very similar!*

Make certain all heads are correctly installed. The indicators on the boom should be pointing towards front of vehicle.



I. System Installation and Setup



The SV8 system is offered as an option at the time of purchase or as an upgrade to an existing Visualiner. This section covers the installation and setup of both situations.

SV8 Option on New Visualiner

Installation and setup of any new Visualiner should be handled by a qualified John Bean Representative. This person will perform all necessary steps to make sure the system is ready for accurate wheel alignments. Many of the steps performed are outlined in the upgrade procedures below. For more information, contact your local John Bean Representative or contact one of the John Bean Company offices listed on the back of this manual.

SV8 Upgrade to Existing Visualiner

Upgrading an existing Visualiner to the SV8 technology is a simple process involving exchanging the rear measuring heads, upgrading the software, and performing several setup functions within the Visualiner program.

IMPORTANT: SV8 technology is supported by software contained on CD-ROM only. A floppy disk only model must have a computer system upgrade prior to adding the SV8 system.

SV8 Upgrade Components

The SV8 consists of two new rear heads to replace the existing 6 sensor rear heads (front heads are the same -- use existing). Unpack the new heads from their shipping box. New interconnect cables are included with the SV8 rear heads.

IMPORTANT: It is necessary to verify the software version the Visualiner is running -- SV8 technology is supported only by software versions 3.9 and later. This can be identified by examining the CD. CD's prior to version 4.0 listed the version number on the CD. Versions 4.0 and up have a part number (86456013-X). If the Visualiner has an earlier software version, contact a John Bean Representative to obtain a newer version.



Rear Head Installation

1. Remove the existing rear heads from the wheel clamps by backing off the head locking knob and sliding the head off the stub shaft. It may be necessary to loosen a small Allen head screw located on the bottom of the head housing (180 ° opposite the locking knob).
2. Place the new SV8 heads on the wheel clamps. Secure by tightening the locking knob. For additional security, tighten the Allen head set screw on the bottom of the head housing until it contacts the stub shaft, then back it off 1/2 turn.

Software Upgrade

The software upgrade involves entry of new security codes that enables the SV8 software system on the CD-ROM.

1. Security codes must be obtained from John Bean Technical Support. In order to provide security codes the following information is required:
 - A) Shop name, address, phone number
 - B) Visualiner Serial Number
 - C) Any other optional features the unit has (i.e. printer, calibration)
 - D) Software version unit is running
 - E) Head Interface Board ID number -- this can be obtained by examining the "logo" screen. The number is located in the lower right corner and is a number similar to "V7000276".
2. After contacting JBC Technical Support, they will generate three 16 digit "code words" that must be entered into the Visualiner software. Follow these steps:
 - A) Get to the Security Code entry screen by selecting "Setup" from the Main Menu. Then choose "System configuration". Then last choice on this menu is "Security code word". See *Figure 1*.
 - B) Type in the three security code words exactly as given. When complete, press Enter.
 - C) An "Options Checklist" screen appears which lists the various software features that are installed (*Figure 2*). Make sure the "8 sensor software package" (located on page 2 of the checklist) has a check by it. If not, reenter the security codes given and recheck. If the option is still not enabled, contact John Bean Technical Support.

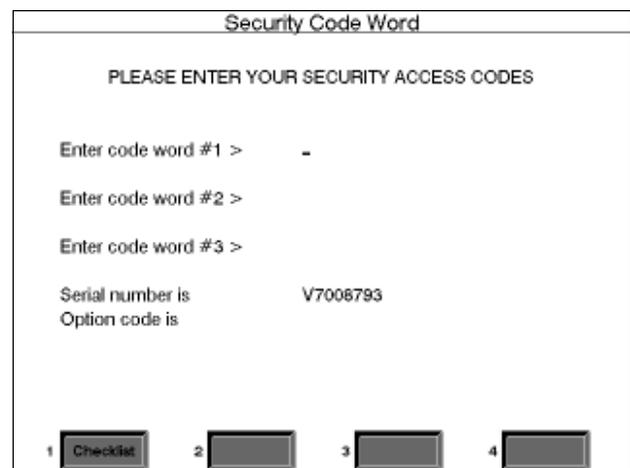


Figure 1 -- Security Code Word Screen

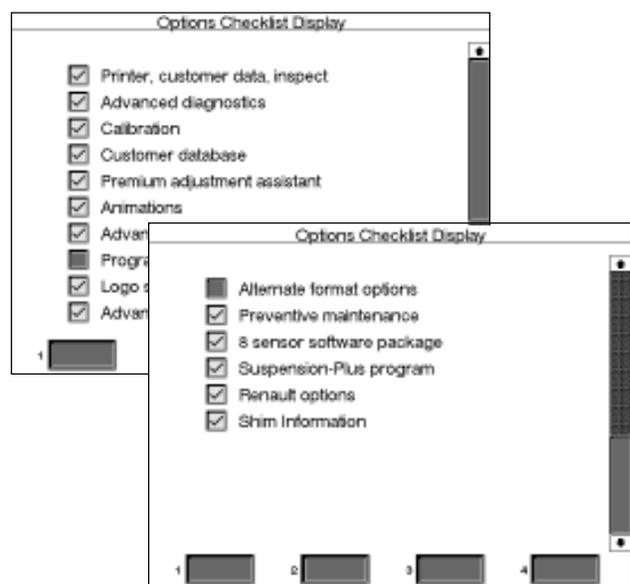


Figure 2 -- Options Checklist Display Screens

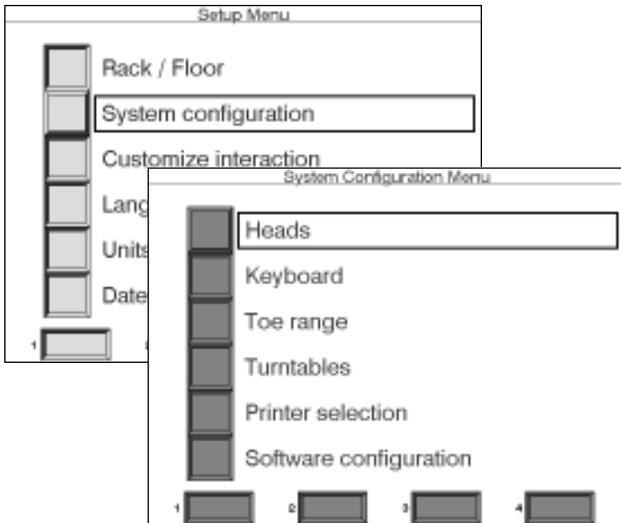


Figure 3 -- Setup and System Configuration

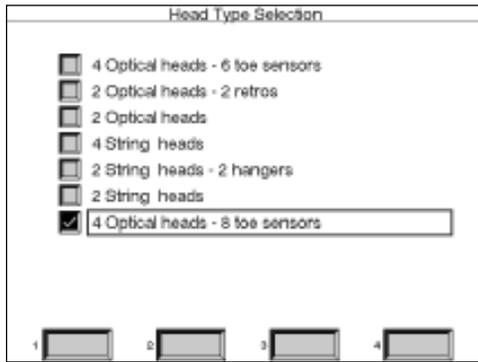


Figure 4 -- Head Type Selection Screen

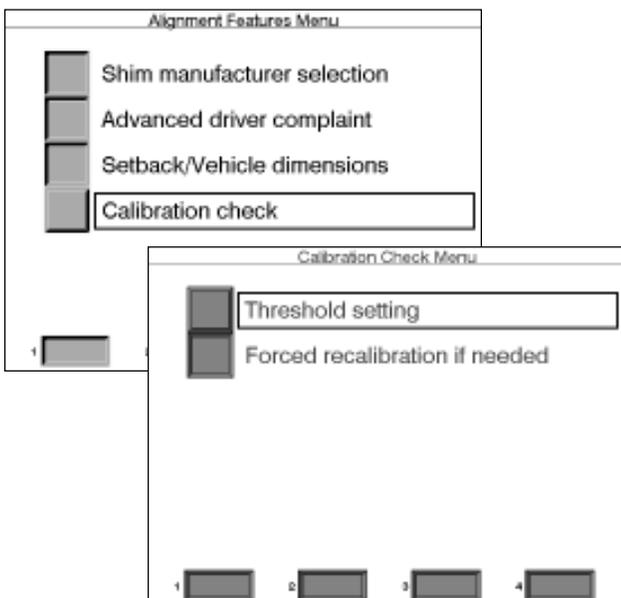


Figure 5 -- Calibration Check Menu

- D) Verify that any additional options are enabled (i.e. database, printer).
- 3. Once Security Codes are correctly entered and proper installed options are verified, exit to the Main Menu and turn the power to the Visualiner OFF. After about 20 seconds, turn the power back ON. When the software restarts it is ready to accept the SV8 measuring heads.

Setup Options

System Configuration -- Heads

It is necessary to make sure software recognizes the existence of the 8 sensor heads. Perform the following steps:

1. From the Main Menu, select "Setup". Choose "System Configuration", and the "Heads". See Figure 3.
2. On the "Head Type Selection" screen (Figure 4) use the up/down arrow keys to place the selection box over "4 Optical heads - 8 toe sensors" and press ENTER.
3. The system is now configured to recognize the SV8 heads.

Note: The Visualiner with 8 sensor heads can be set up as a 6 toe sensor system. This may be useful if there is a failure in the rear cross toe system. However, features specific to the SV8 system will not be active.

Calibration Check Setup

There are a couple of items that must be setup to optimize the Continuous Calibration Check feature. To access these, from the Main Menu go to "Setup", "System Configuration", then choose "Optional alignment features". Then select "Calibration Check".

The choices on the Calibration Check Menu (Figure 5) are:

- > Threshold setting -- allows selection of the amount of tolerance that is allowed before the Visualiner software notifies the operator that the unit is out of calibration.
- > Forced recalibration if needed -- by default, when the software determines the unit is out of calibration it notifies the operator, but allows him to proceed with the current alignment. This menu item,

when enabled, will not allow additional alignments to be done until a head calibration is performed.

Threshold Setting

Threshold setting controls the amount of allowable error in the SV8 toe system before the warning of a required calibration is displayed. The calibration check display is on the "Straighten and Lock Steering Wheel" display, appearing in the alignment process between the Rear and Front Readings meter displays.

The "Threshold Setting" menu allows a selection between "Normal" or "High" setting for the calibration check (Figure 6). The normal setting is adequate for most situations and is recommended.

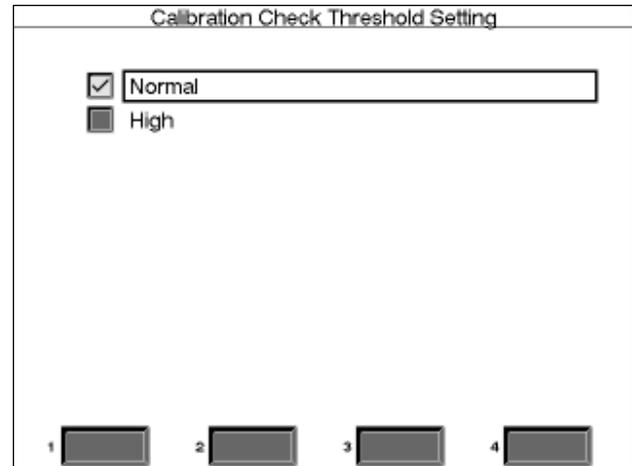


Figure 6 -- Calibration Check Threshold Setting

Forced Recalibration if Needed

A password is required to enter the "Forced recalibration if needed" menu. This selection password can be obtained from John Bean Technical Support.

After the password has been entered the following selections appear:

1. "Optional recalibration if calibration check fails"

If this first option is selected the user will have the possibility of continuing the alignment process even if the calibration check fails (see message Figure 7). This allows completion of an in-process alignment.

2. "Forced recalibration if calibration check fails"

If this second option is selected, the user will not be allowed to end his alignment. The program process will only allow exit to the "Main Menu" for immediate recalibration. The Visualiner will not perform additional alignments until the aligner is calibrated.

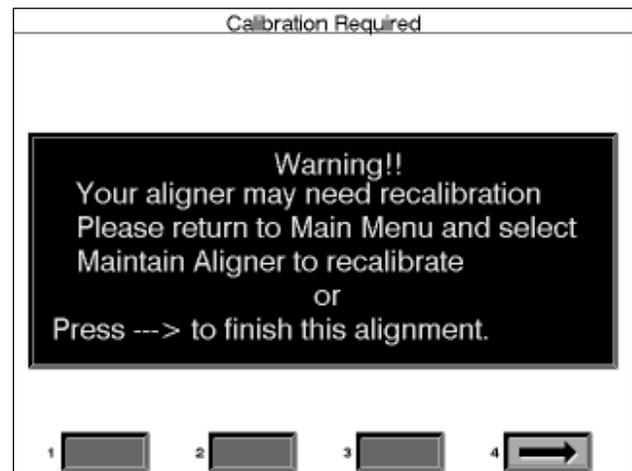


Figure 7 -- Calibration Required Message

Head Leveling Bypass

One of the Skip Allowed Menu selections is "Head level" (Figure 8). When allowed, the operator can bypass the head leveling process. This is done by pressing the red "No" key on the keyboard.

IMPORTANT! Level heads are critical to accurate measurement of certain angles (including

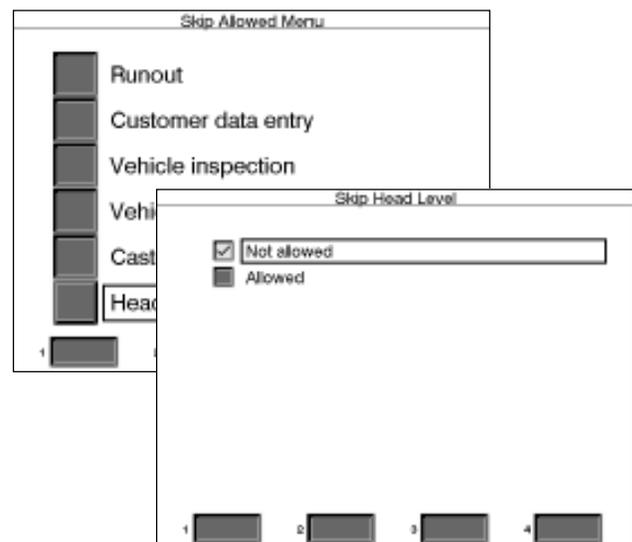


Figure 8 -- Skip Head Level Selection

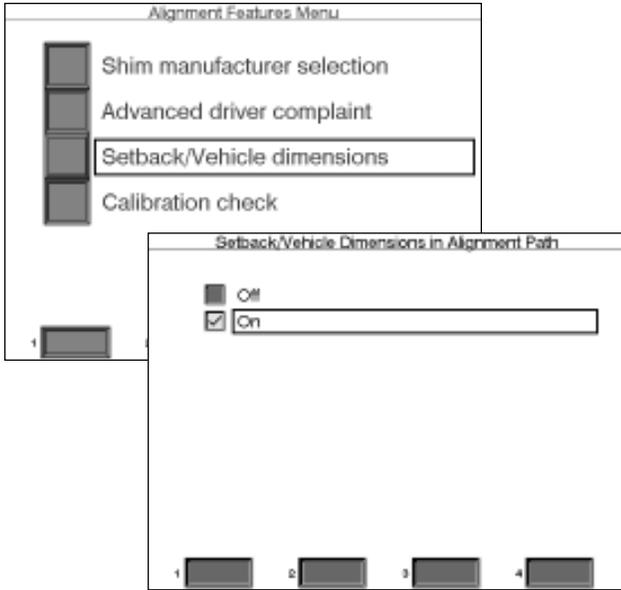


Figure 9 -- Options Checklist Display Screens

toe). Skipping head level prompts may lead to poor wheel alignment results.

Setback/Vehicle Dimensions in Path

The SV8 software can be set up to place the setback/vehicle dimensioning feature within the normal alignment path for each vehicle. Taking these measurements requires no additional effort by the operator -- it is automatic.

To place setback/vehicle dimensioning in the alignment path, from the Main Menu select "Setup", then "Optional alignment features" (Figure 9).

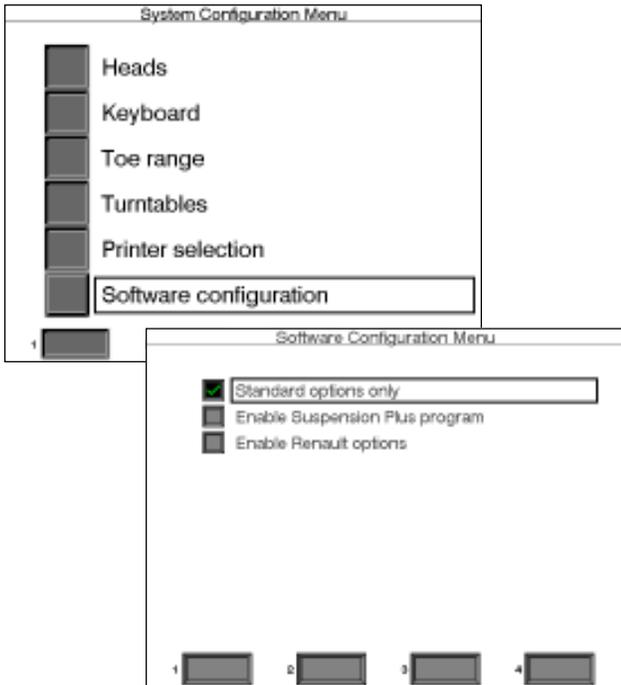


Figure 10 -- Software Configuration

Software Configuration

The SV8 Surround Sensor software contains several features that are specific to certain vehicles, in particular 1995 and later Audi A4 and A8, and all Renault vehicles. These vehicles require special routines to perform correct alignments to manufacturers procedures.

To get to the Software Configuration Menu, go to "Setup", "System Configuration", and "Software Configuration" is the last menu item (Figure 10). Choices are:

- > Standard options only -- standard Visualiners use this option. When an Audi or Renault is chosen, the standard alignment routine is used
- > Enable Suspension Plus program -- this option enables the Audi-specific alignment routine plus a few other features mandated by Audi (see VAG Option section of this manual).

NOTE: This option is security code protected, and is available only to authorized VAG Repair Centers.

- > Enable Renault options -- this enables an alignment routine that is used in Europe to determine proper alignment specifications on Renault vehicles.

II. Using the Visualiner With SV8

Operation of the Visualiner with the SV8 system is very similar to a standard Visualiner. This section will cover only the differences -- refer to the Visualiner Operation Manual for more assistance with general aligner operation.

Mounting the Heads

The measuring heads must be installed on the proper wheel for correct operation. The rear heads are identified with a decal located on the boom tube (see the diagram on Page 7).

Head Level Screen

Maintaining level measuring heads is important for accurate angle measurements. With the SV8 Surround Sensor system, whenever a critical measurement is about to be made the head level is checked. If the heads are out of level, a screen appears (Figure 11), prompting the operator to level any heads needing this. As the head is moved the bubble on-screen will move. When all 4 heads are leveled the software will automatically advance to the next screen.

Note: It is possible to set up the system to allow the head level screen to be bypassed (skipped -- see the setup section of this manual). This is done by pressing the "NO" or "Cancel" button on the keypad, remote, or any head keypad.

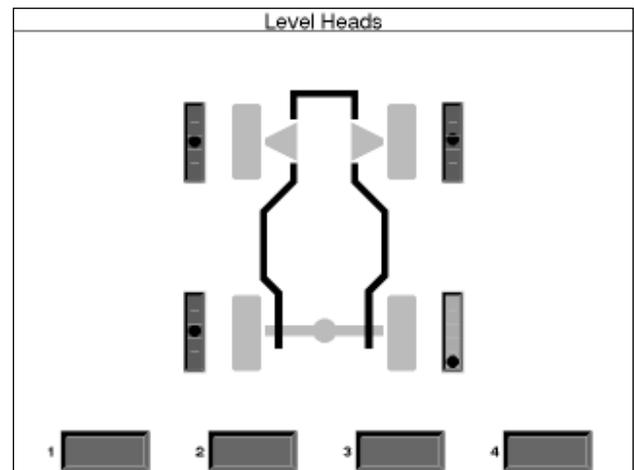


Figure 11 -- Head Level Indication Screen

Calibration Check

Before the front meter screen is displayed, the SV8 software performs a calibration check on the system. This is a powerful feature to insure all alignments are performed with an accurate instrument.

If the calibration is correct, a check mark appears in the box next to "Calibration check", located in the upper left corner of the screen (Figure 12). When enter is pressed the software proceeds normally.



Figure 12 -- Calibration Check is Performed

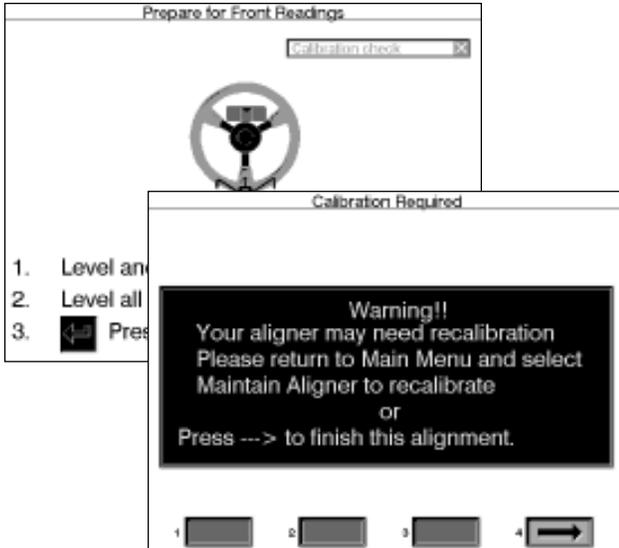


Figure 13 -- Calibration Required Message

If the calibration check determines a problem exists, there will be an "X" in the box, and the indicator turns red and moves to the upper right corner. When enter is pressed a warning appears, giving an indication of what needs to be done (Figure 13). It is recommended a calibration of the system be performed at this time, since there is no way to know how far off the system is. After calibration is done, if the system continues to fail the calibration check, consult with Technical Support or Service.

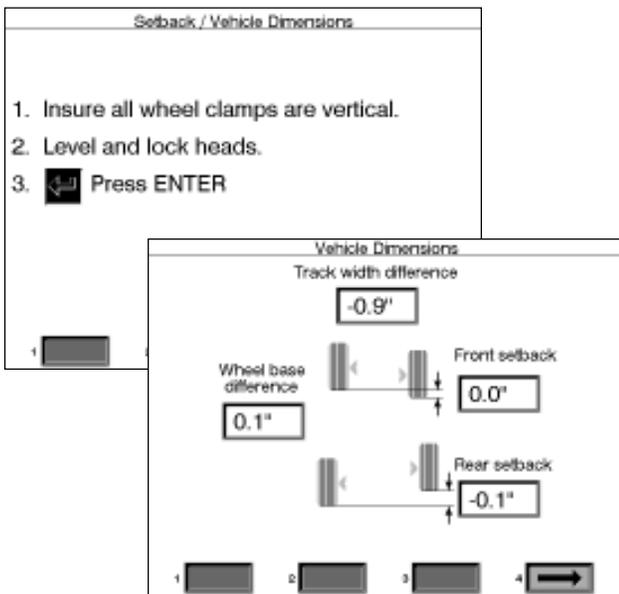


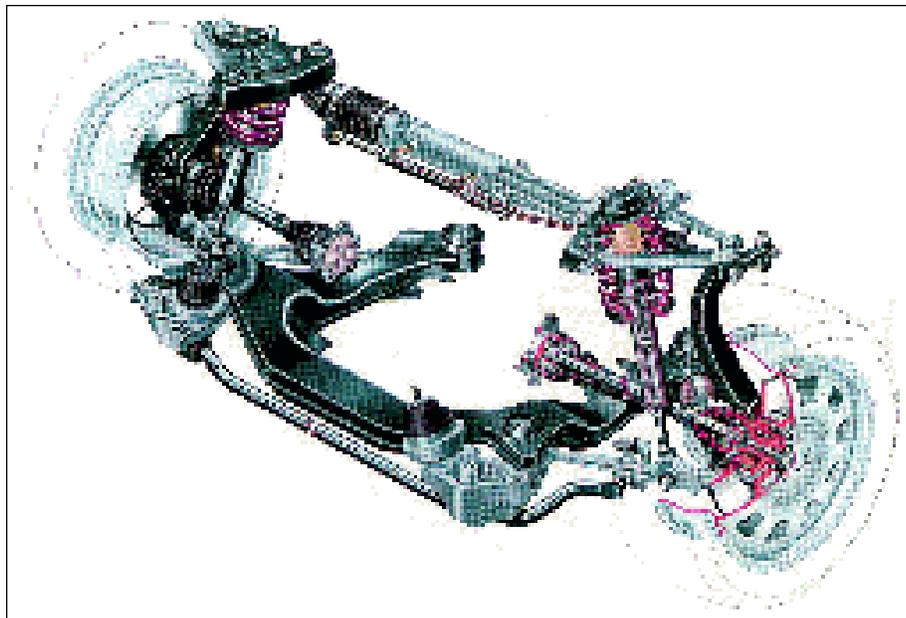
Figure 14 -- Vehicle Dimensions Screen

Setback / Vehicle Dimensions

Setback and vehicle dimensions are useful tools to diagnose vehicles that may have been involved in a collision. With the SV8 system, measurements of these types are easy. These screens (Figure 14) automatically appear if this feature has been set up to appear within the alignment path (see Setup section of this manual). If they are not part of the alignment path these measurements can be obtained from the "Measure" soft-key on the front or rear meter screens.

The initial screen provides preliminary instructions -- make sure the clamps are vertical and level and lock the heads. The Vehicle Dimensions screen is a graphical representation of the position of each wheel. The information displayed includes front and rear setback, wheelbase difference, and track width difference.

Section III. VAG Software Instructions



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INTRODUCTION

The VAG (Volkswagen-Audi Group) option for the Visualiner Series is a unique model (VAG 1943) that utilizes the factory-approved procedures for aligning the 1995 and newer Audi A4 and 1996 and newer A8, and the 1998 and newer Volkswagen Passat. These vehicles employ a unique suspension system that require additional steps to perform correct wheel alignments.

From a hardware perspective, the VAG 1943 is the same as any other 8 sensor Visualiner with 2 exceptions in the computer:

1. 2 - 4x4 CD-ROM Changers
2. A optional modem for communications

When performing a wheel alignment, the software flow and operation is the same as other 8 sensor units, unless an 1995/96 and newer Audi A4, A8, or 1998 VW Passat is selected on the specification entry screen. When one of these models is selected the software goes through a special procedure designed by VAG. Once in the routine all steps must be performed. A portion of the procedures utilize a special fixture available only to VAG Service Centers.

This portion of the manual describes the use of the Visualiner when utilizing the VAG software. General instruction for using the Visualiner are contained in the Operator's Manual, and 8 Sensor instructions in the first sections of this manual. Refer to the VAG Service Manuals for the A4, A8, and Passat for specific instructions on alignment procedures and fixture usage.

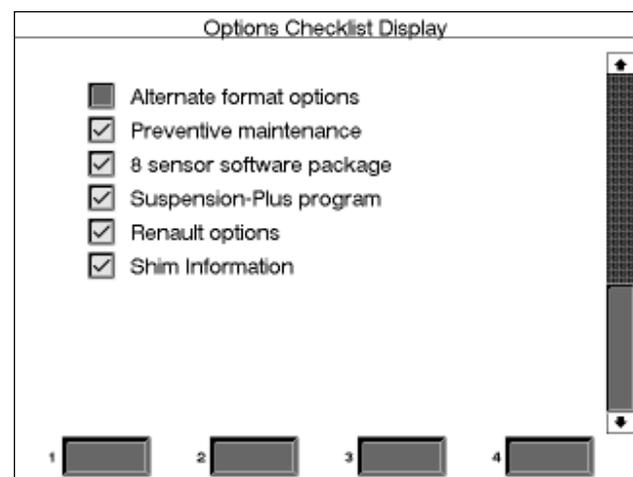
Note: The VAG option is available only on a special model offered only to authorized VAG Service Centers through the Equipment Solutions program. The VAG software routine is protected by security codes from unauthorized usage.

VAG Software Setup

In order to utilize the VAG software routine the following criteria must be met and items must be enabled:

1. Must be a model VAG 1943
2. Correct security codes entered to enable the 8 sensor and "Suspension Plus" options

Note: Review Options Checklist to make sure items are enabled (see below)

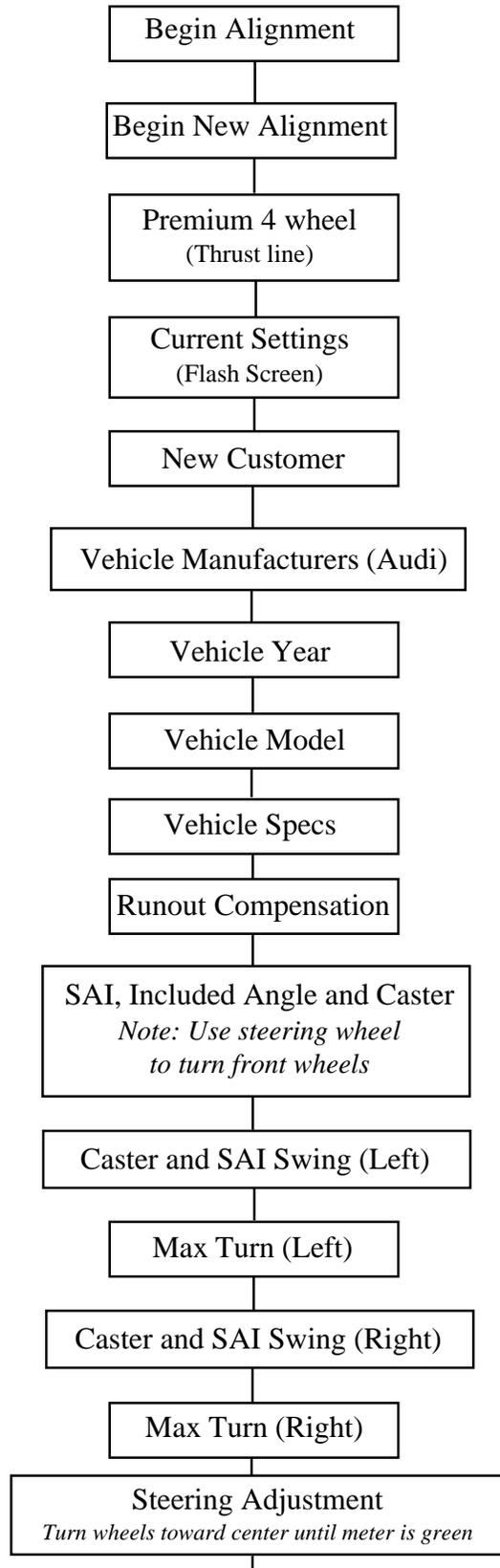


3. The 8 sensor head option must be enabled in the system setup (see *Page 10*)
4. The "Suspension Plus" option must be enabled under Software setup (see *Page 12* for details)
5. An Audi A4 or A8 (1995/96 and later) or 1998 VW Passat must be selected as the vehicle
6. Must have the special fixture to use when prompted -- the alignment cannot be completed without the fixture.

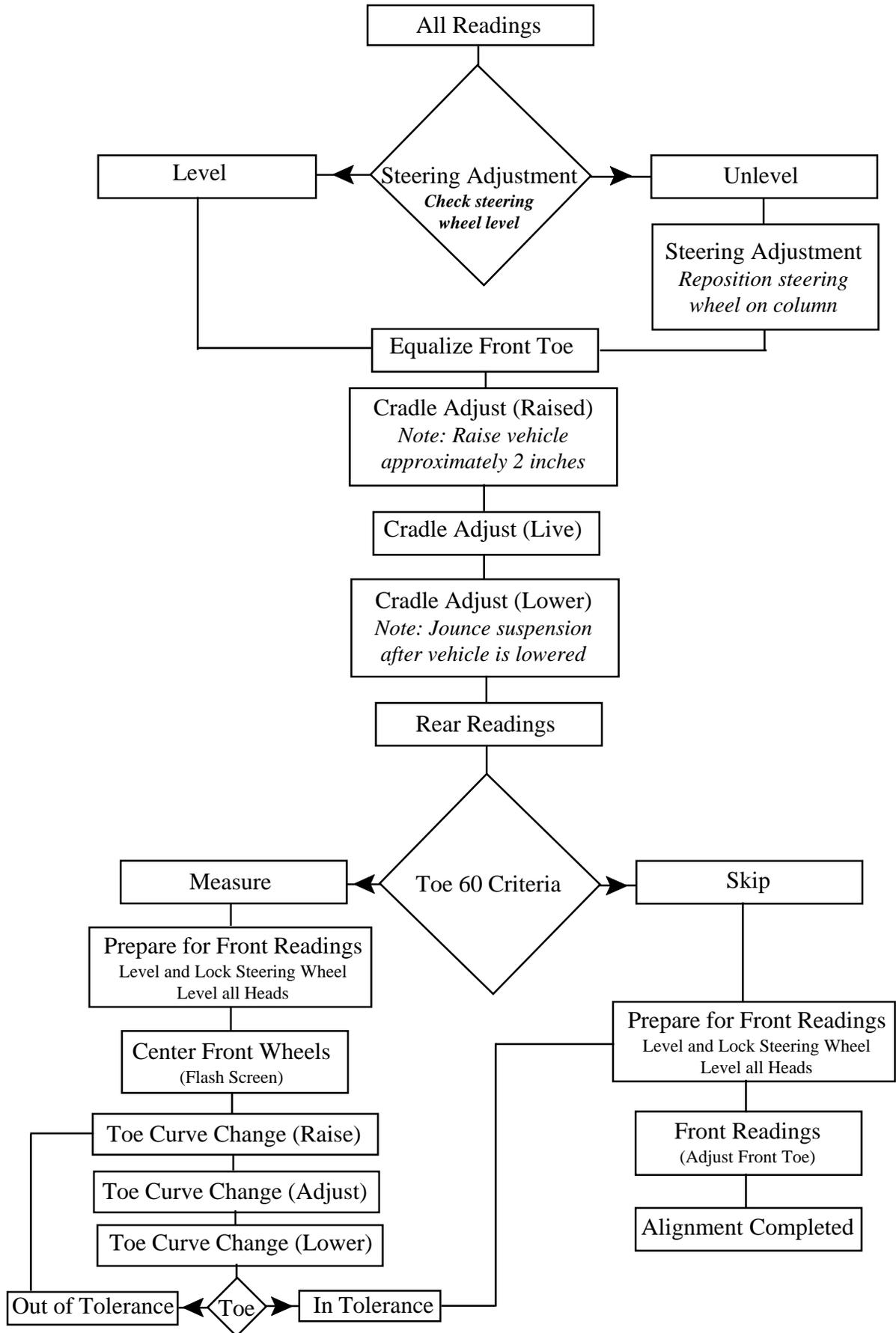
VAG Software Flow

The flowchart on *Pages 18-19* describes the VAG alignment procedure. The screens on *Pages 20-21* describe the steps unique to the VAG routine in more detail.

VAG Software Flowchart



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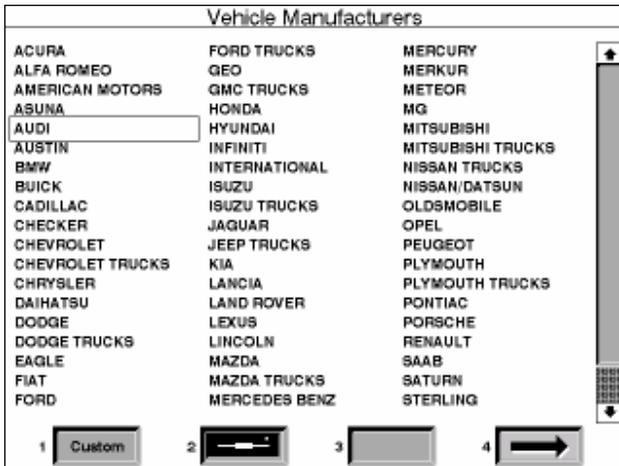


Figure 15 -- Vehicle Manufacturer

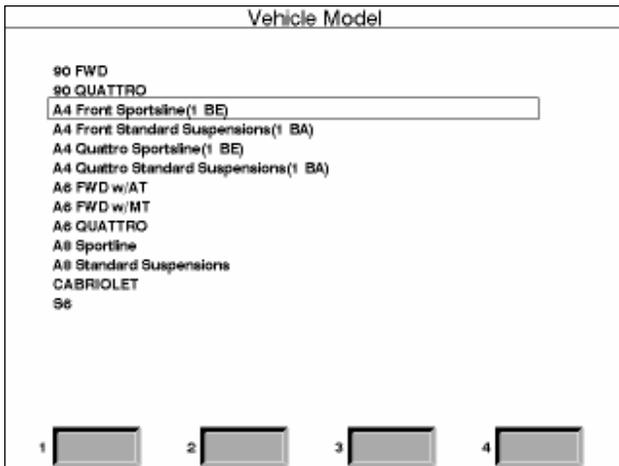


Figure 16 -- Vehicle Model

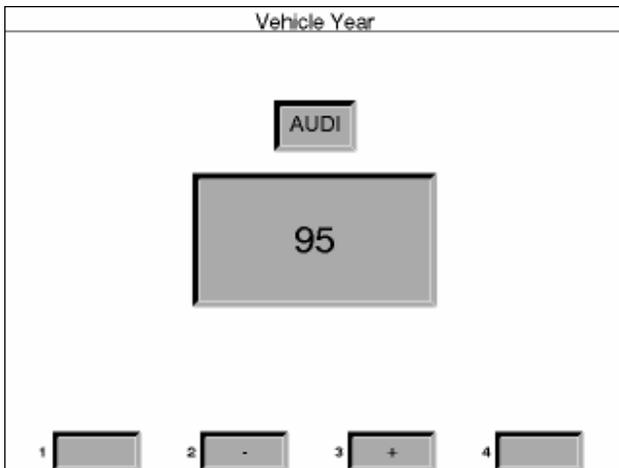


Figure 17 -- Vehicle Year

VAG Software Operation

Step 1. Begin Alignment

Select Begin Alignment on the Main Menu. Then choose "Begin new alignment".

Step 2. Select Premium 4 Wheel Alignment

Step 3. Customer Information

Enter new customer information if desired, or select an entry from the Customer Database.

Step 4. Select Vehicle

Select the vehicle manufacturer (Audi or VW), model (A4, A8, or Passat), and year (95 - later). *Figures 15 - 17.*

Step 5. Runout Compensation

Perform runout compensation as normal.

Step 6. Measure SAI, Included Angle, Caster, and Maximum Turn Angle

These angles are measured on the turntables with one turn to the left and one turn to the right. Use the car's steering wheel when making the turn for maximum accuracy. A brake pedal depressor must be used. If the system is not equipped with electronic turntables, the measurement of maximum turn angle does not appear.

Step 7. Center Steering

Turn the steering wheel to straight ahead using the on-screen meter display.

Step 8. All Readings

The All Readings screen displays all measured values for the car. Do not make adjustments at this time. Press Enter to proceed.

Step 9. Steering Adjustment

Observe the level condition of the steering wheel and press the appropriate soft-key on the keypad (Figure 18). If it is unlevel, remove and reposition the wheel according to factory procedures.

Step 10. Equalize Front Toe

Turn the steering wheel to equalize front toe as displayed on-screen.

Step 11. Cradle Adjustment

The software determines, through examination of camber and SAI values, whether the car requires a cradle (subframe) adjustment. If it does, the cradle adjust routine starts automatically (Figure 19). Refer to the VAG Repair Manual for subframe alignment procedures.

If there is no need for cradle adjustment the software bypasses these steps. This procedure is the only way to correct for front camber problems since there is no separate adjustment. If camber is still a problem, examine the suspension for damage or excessive wear.

Step 12. Rear Readings

The rear readings screen appears next. Any corrections to rear camber (all-wheel-drive models only) and toe should be made at this time. Note that rear toe on front-wheel-drive models can only be centered by shifting the rear axle beam.

Step 13. Toe 60 Criteria

The unique VAG steering system found on these vehicles allows for an adjustment to optimize toe curve change through suspension travel. Prior to adjusting the front wheel alignment angles, a screen appears that gives the option to check and correct the toe curve (Figure 20). The Toe 60 Criteria screen details the situations when this should be checked. From this screen, soft-key #2 begins the measurement sequence (see Page 22). Soft-key #3 skips the toe curve measurement and goes directly to the front meter screen to allow correction of toe.

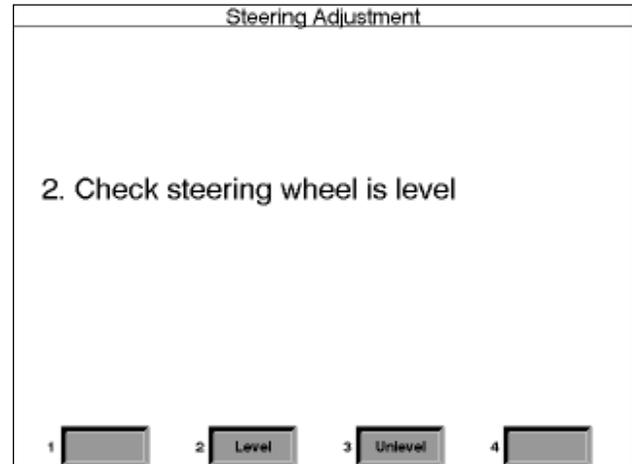


Figure 18 -- Steering Wheel Level

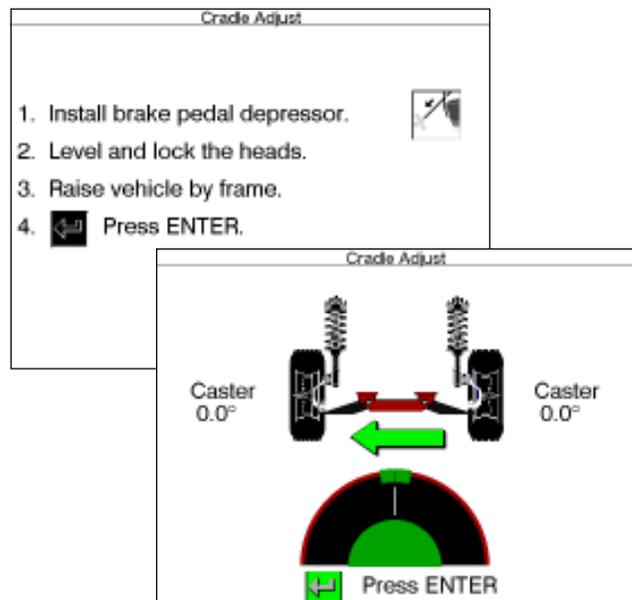


Figure 19 -- Cradle Adjust Screen

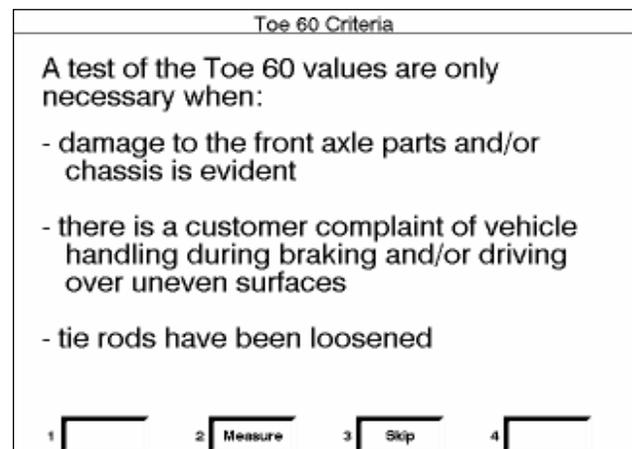


Figure 20 -- Toe 60 Criteria

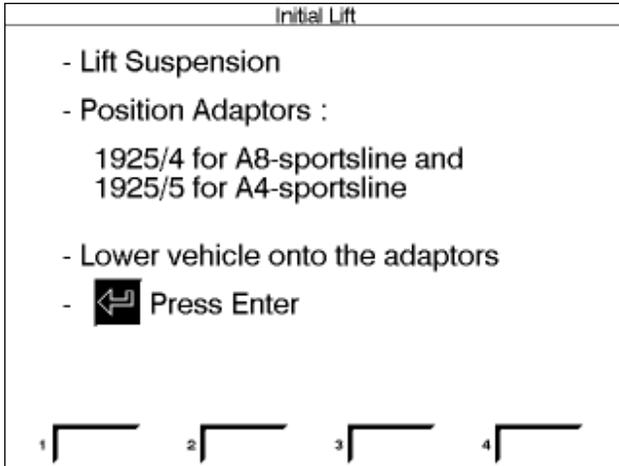


Figure 21 -- Install Adapters

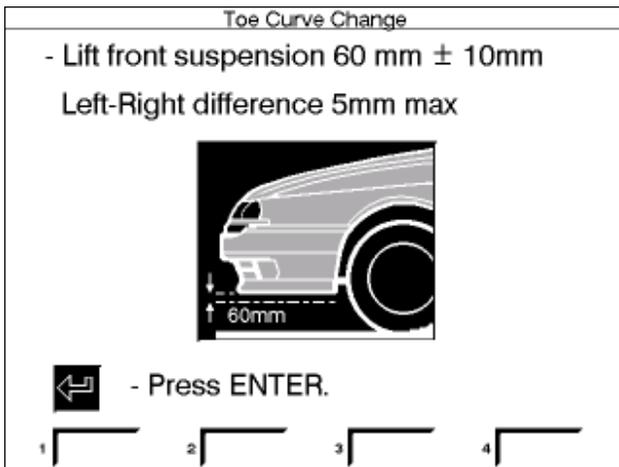


Figure 22 -- Lift Suspension 60 mm

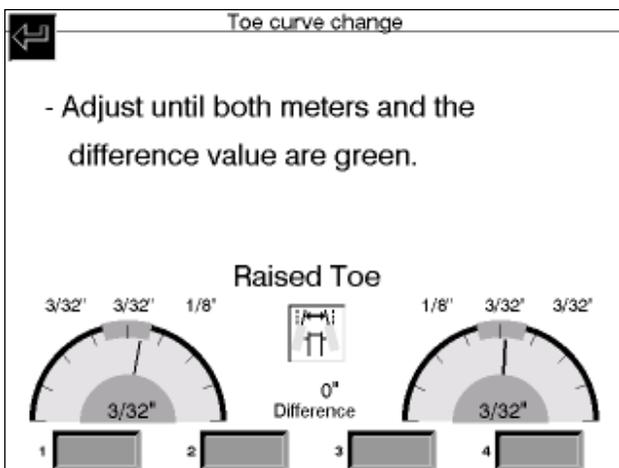


Figure 23 -- Raised Toe Adjustment

Measuring Toe Curve Change

When soft-key #2 is pressed the software begins the process of measuring and correcting toe curve change through suspension travel.

1. Initial Lift

As indicated by the on-screen instructions, the suspension must first be lifted (Figure 21). A special fixture with adapters, available only from VAG, is required for this procedure. The fixture must be properly positioned and the car lowered onto the adapters as instructed. Consult the VAG Service Manual for instructions on adapter usage.

2. Raise the Suspension

Once the vehicle is in place on the fixture, the next screen instructs the operator to raise the suspension 60 mm using the adapters supplied with the VAG tool, keeping the left and right side difference within 5 mm (Figure 22). The software examines the toe with the car raised on the adapters.

3. Adjust Toe Curve

The software displays a screen to make adjustment of the raised toe a simple process (Figure 23). Refer to the VAG Service Manual for special tools needed and for correct procedures for adjusting the raised toe. Once the meters are green, press Enter.

4. Lower the Suspension

The next step asks to remove the 60 mm adapters and place the suspension onto the fixture (*Figure 24*). This allows the software to measure the toe in the lowered or "unladen" position. If the toe curve adjustment was properly made the software jumps to step 5, removal of the fixture and adapters. If the toe curve remains excessive, the software repeats the steps to make the adjustment. The toe curve change must be within tolerances in order to proceed with the front wheel alignment.

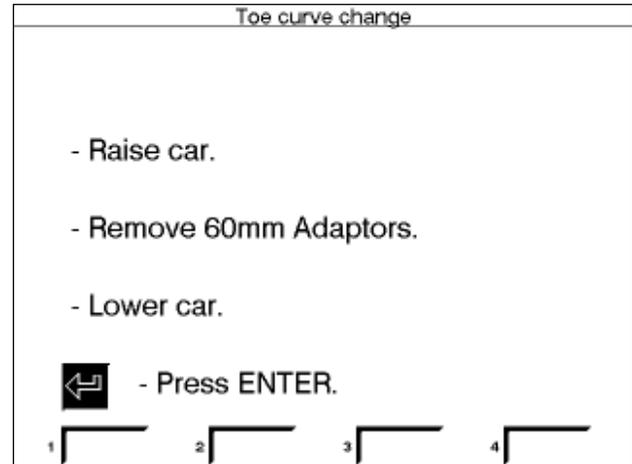


Figure 24 -- Check Toe with Car Lowered

5. Lower Car

Once the software is satisfied with the setting of the toe curve change it instructs the operator to remove the adapter and fixture from the vehicle (*Figure 25*).

Step 14. Front Wheel Alignment

The software proceeds to the front alignment screens. This completes the special procedures used in the VAG software routine. In all other ways, and for all other vehicles, the aligner operates according to the instructions in the Visualiner Operator's Manual and the 8 Sensor portion of this manual.

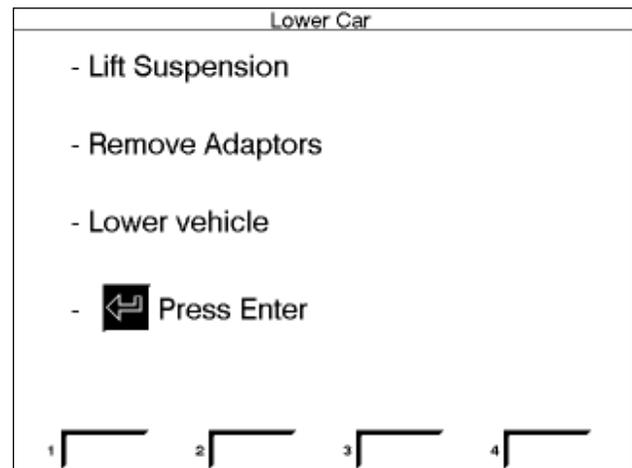


Figure 25 -- Remove Fixture

Alignment Count Display

This feature is only available with the "Suspension Plus" option. It is accessed from the Maintain Aligner Menu (*Figure 26*). The screen shows two different counts -- the total alignments done with the Visualiner since installation and the alignments done since the unit was last serviced and calibrated. The first count can only be reset by JBC authorized personnel while the second counter can be reset by the user (soft-key #2).

The alignment count is automatically printed on the printout of alignment results. It is located in the upper right hand corner.

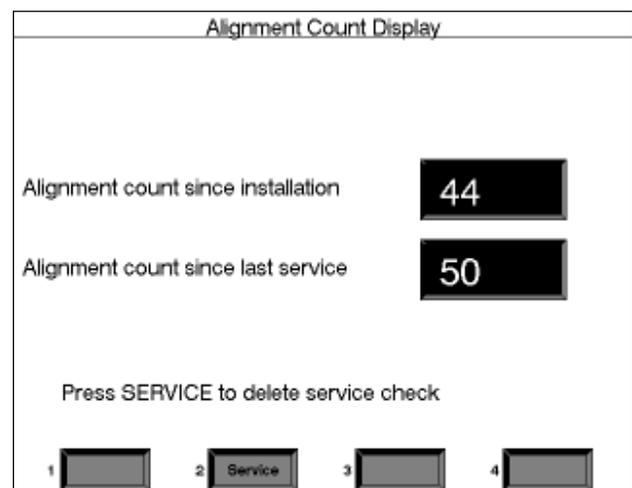


Figure 26 -- Alignment Count

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