

WINALIGN®

Industry Standard Alignment Software

OPERATIONS MANUAL



WinAlign Ops Manual

Form: 3850-T
02/27/2025
Supersedes 01-25



Hunter Learning Channel

Table of Contents

1. Getting Started	10
1.1. General Information	10
1.2. System Requirements	10
1.3. Inside Help Tips	10
1.4. For Your Safety - Hazard Definitions	10
1.4.1. Hazard Definitions	10
1.4.2. North America	12
1.4.3. Other Regions	12
1.4.4. FUSING	12
1.4.5. EQUIPMENT SERVICE	12
1.4.6. PROVISIONS FOR LIFTING and CARRYING	12
1.4.7. Atmosperics	12
1.5. Operating the Console	13
1.5.1. Alignment Procedure Bar	14
1.5.2. Using the VirtualView Adjustment Feature	15
1.6. Using the Remote Indicator	18
2. Basic Operation Information	27
2.1. Sensors and Targets	27
2.1.1. TD Target Alignment Reflectors and QuickGrip Adaptors	27
2.1.2. Wide Angle Target	27
2.1.3. Standard or QuickComp Roll-Forward Compensation	27
2.1.4. Hook Options	28
2.1.5. Placing QuickGrip Adaptor on Wheel	29
2.2. Self-Centring Adaptors and Targets	31
2.2.1. Mounting Sensors or Targets onto Wheel Adaptors	31
2.2.2. Mounting Wheel Adaptor onto Wheels	33
2.2.3. Connecting Sensor Cables with Optional Rack Wiring Kit	33
2.2.4. Connecting Sensor Cables without Optional Rack Wiring Kit	34
2.2.5. Compensating Conventional Sensors - General Compensation	34
2.2.6. Rolling Compensation	36
2.2.7. Compensating Camera Based Targets	37
2.2.8. Roll Check Measurement Feature	41
2.2.9. Jacking Compensation	41
2.3. Vehicle Specifications	42
2.3.1. Primary and Secondary Specification Groups	43
2.3.2. Vehicle Specification Memory	43
2.3.3. Vehicle Recall Specifications Selection	44
2.3.4. Selecting from the Vehicle Lists	44
2.3.5. Selecting by Vehicle Identification Number (VIN)	45
2.3.6. Selecting User Specifications	46
2.3.7. Entering and Editing Specifications	46
2.3.8. Selecting Specification Formats	47
2.3.9. Reducing Tolerances	48
2.3.10. Specification Notes	48
2.3.11. Storing User Specifications	48
2.3.12. Deleting User Specifications	49
2.3.13. Factory Amended Specifications	50
2.4. HunterNet®	50
2.4.1. ShopResults	51
2.4.2. Sending Alignment Results to the Hunter Web Server	51
2.4.3. Sending Alignment Results	52
2.4.4. Logging On to HunterNet® Online Service	52
2.4.5. Linked Accounts	52
2.5. WebSpecs Online Specification Database	52
2.5.1. WebSpecs Hardware and Software Requirements	53
2.5.2. WebSpecs User Authorization	53
2.5.3. Accessing WebSpecs®.NET on the Aligner Console	53
2.5.4. Vehicle Selection	54
2.5.5. Downloading Specifications	54
2.5.6. Uploading Specifications From a File	55

2.5.7. Recalling Saved WebSpecs	55
2.5.8. Deleting Saved WebSpecs	55
2.5.9. Viewing Adjustment Illustrations in WebSpecs	56
2.5.10. Parts Inspection	56
2.5.11. Tools & Kits	57
2.5.12. Printing WebSpecs® Adjustment Illustrations	57
2.5.13. Using WebSpecs on a Remote PC	57
2.5.14. Requesting a Specification	57
2.5.15. TPM Specs on WebSpecs	57
2.5.16. TPM Specs within WinAlign	58
2.6. ShopResults	58
2.6.1. Emailing Results	59
2.6.2. Alignment/Quick Check®	59
2.6.3. Trends and Reports	59
2.6.4. Selecting Display Units	61
2.6.5. Printing Specifications	61
2.7. Alignment Log Analyzer	62
2.8. Vehicle Measurements and Adjustments	63
2.8.1. Vehicle Plan View Status Indicator	63
2.8.2. Target Blockage	63
2.8.3. Sensor Troubleshooting	64
2.8.4. Spoiler Mode (Applies to DSP708 Sensors)	65
2.8.5. Showing Measurements	65
2.8.6. Bar Graph Adjustments	65
2.8.7. Bar Graph Groups	66
2.8.8. Context Sensitive Menu	67
2.8.9. Zero Adjustments	68
2.8.10. Showing and Selecting Front and Rear Axles	69
2.8.11. Adjusting with Axles Raised	69
2.8.12. Adjusting with Axles Raised Using Jack Detect Feature	70
2.8.13. Wheel-Off Adjust Feature	70
2.8.14. Saving Before Measurements	73
2.8.15. Control Saved Measurements	74
2.8.16. Showing Current Measurements	74
2.8.17. Showing Before Measurements	74
2.8.18. Saving Current Measurements as Before Measurements	74
2.8.19. ExpressAlign Alignment Adjustment System	75
2.9. Alignment Procedure	77
2.9.1. Adjustment Order	77
2.9.2. Selecting the Procedure	77
2.9.3. Camera Based Alignment Reference	77
2.9.4. Measuring Caster, SAI, and Included Angle	78
2.9.5. Measuring Caster	79
2.9.6. Measuring SAI and Included Angle	81
2.9.7. Faster Caster - Measuring Caster and SAI/I.A. Simultaneously	82
2.9.8. Live Caster	83
2.9.9. Lock-Check Sensor Checking Feature	83
2.10. Additional Measurements	83
2.10.1. Frame Angle Measurements	83
2.10.2. Measuring Ride Height	84
2.10.3. Weight at Wheel	90
2.10.4. Advanced Vehicle Handling Values	90
2.10.5. Symmetry Angle/Set Back Measurements	90
2.10.6. Set Back Procedures	90
2.10.7. Toe-Out-On-Turns	92
2.10.8. Maximum Steering Angle	94
2.10.9. Tire Condition	95
2.10.10. Bump Steer Measurement Overview	98
2.10.11. Bump Steer Measurement Using Live Ride Height Targets Overview	99
2.10.12. Toe Raised Procedures	101
2.10.13. VAG Flowchart	104
2.10.14. Tire Information	104

2.10.15. Wheelbase and Track Width Measurements	105
2.10.16. SBDA - Suspension Body Dimension Audit	106
2.11. Illustrating Vehicle Adjustments	109
2.12. Front Adjustments	110
2.12.1. Front Shims	110
2.12.2. CAMM Alignment Adjustment Feature - Control Arm Movement Monitor for Front Cams and Slots	111
2.12.3. WinToe® Toe Adjustment System	113
2.12.4. ABC - Automatic Bushing Calculator Adjustment Feature	117
2.13. Printing	120
2.13.1. Set Printout Note	120
2.13.2. Set Steering Wheel Level Condition	121
2.14. CodeLink Device	121
2.14.1. Setup Options	121
2.14.2. Using CodeLink During Alignments	121
2.14.3. Checking ESC Related Diagnostic Trouble Codes Before Alignment	122
2.15. Performing the Safety System Alignment Reset	123
2.15.1. About ADAS (Advanced Driver Assistance Systems)	123
2.15.2. Safety System Reset Using CodeLink	123
2.15.3. ADAS Reset	125
2.15.4. Example ADAS Reset Procedure	125
2.15.5. Aftermarket ADAS Fixture Support	127
2.16. asTech ADAS Device	128
2.16.1. Alignments with asTech Device	128
2.16.2. Dynamic ADAS Reset Procedure	129
2.16.3. Static ADAS Reset Procedure	131
3. WinAlign® Tuner Alignment Procedure	133
3.1. WinAlign® Tuner Overview	133
3.2. WinAlign Tuner Setup	133
3.3. WinAlign Tuner Procedure	134
3.4. WinAlign Tuner Options	134
3.4.1. Performing a Vehicle Alignment with WinAlign® Tuner	136
4. Quick Check® Procedures	145
4.1. Quick Check® Overview	145
4.2. Quick Check® and Accessories Setup	145
4.2.1. Quick Check® for Long Wheelbase Vehicles	145
4.2.2. Standard Compensation Option	146
4.2.3. Tread Depth Setup	146
4.2.4. Battery Health and Diagnostic Systems Check Setup	148
4.2.5. Identifix Code Assist Integration	148
4.2.6. Changing Component Wireless Settings	148
4.2.7. Quick Check® Printout Setup	149
4.2.8. Quick Check® Results	150
4.3. Quick Check® Procedure	150
4.3.1. Diagnostic Systems Check	150
4.3.2. Battery Test Process	151
4.4. Quick Check® Drive	153
4.5. Quick Tread Edge®	153
4.5.1. Unique Setup Items	153
4.6. Quick Tread Tread Depth System	154
4.6.1. Setup	154
4.6.2. Quick Tread Measurement Issues	157
4.6.3. Accessing the Sensors	158
4.6.4. Quick Tread Operation	159
4.7. Quick ID License Plate Recognition	159
4.7.1. Quick ID Confirmation Screen	159
4.8. Hybrid Mode Setup	161
4.8.1. Dual Quick ID Camera Setup	162
5. Aligner Set-Up	164
5.1. Set-Up	164
5.1.1. Factory Settings for Aligner Set-Up	164
5.2. Display	169
5.2.1. Setting Up the Display Language	169

5.2.2. Setting Up the Logo Screen Advertising Message	169
5.2.3. Selecting Displayed Logo Type	170
5.2.4. Selecting Animated or Still Procedure Images	170
5.2.5. Setting Up the AlignGuide Feature	170
5.2.6. Setting Up the Background and Softkey Colors	170
5.2.7. Setting Up the Web Site Address	171
5.3. Alignment Procedures	171
5.3.1. Setting up the Common Alignment Preferences	171
5.3.2. Setting Up AutoVIN	172
5.3.3. Setting Vehicle Specific Alignment Preferences	172
5.3.4. Setting Up the ExpressAlign/Power Tool Preferences	172
5.3.5. Setting Up the Alignment Procedure	173
5.3.6. Setting Up the Alignment Procedure Automatic Selection	173
5.3.7. Setting Up the Alignment Measurement Units and Formats	174
5.3.8. Setting Up the Caster Measurement Selection	175
5.3.9. Setting Up the Reduce Number of Softkeys: Enable/Disable	175
5.3.10. Setting Up the Set Vehicle Selection Options	176
5.3.11. Default Vehicle Specification	176
5.4. Bar Graphs	176
5.4.1. Setting Up the Front Axle Bar Groups	176
5.4.2. Setting Up the Rear Axle Bar Groups	176
5.4.3. Setting Up the Cross Bar Graph/Additional Cross Angles: Enable/Disable	177
5.4.4. Setting Up the Show Specs on Bar Graphs: Enable/Disable	177
5.5. Printer	177
5.5.1. Setting Up the Printer	177
5.5.2. Setting Up the Print Language	178
5.5.3. Setting Up the Printout Advertising Message	178
5.5.4. Setting Up the Print Warning Message: Enable/Disable	179
5.5.5. Setting Up the Report Format	179
5.5.6. Setting Up the Default Printout	179
5.5.7. Custom Print Header	180
5.5.8. Setting Up the Print Preview	182
5.5.9. Setting Up the CodeLink DTC's on Printout	183
5.5.10. Number of Copies	183
5.5.11. Print Selector Printout List	183
5.5.12. Setting Up the Printout Logo	183
5.5.13. Currency	184
5.6. Sensors	184
5.6.1. Setting Up the Sensor Type	184
5.6.2. Setting Up Optional Equipment	184
5.6.3. Setting up the Toe-Out-On-Turns Device	184
5.6.4. Updating the Sensor Software	185
5.6.5. Setting Up the Conventional Sensors Compensation Options	185
5.6.6. Setting Up the Sensor Mount Direction	186
5.6.7. Scanning HF Channels	186
5.6.8. Setting Up the HF/HFSS Channel	187
5.6.9. Setting Up the Cordless Channel for the Wireless Remote Indicator	187
5.6.10. Updating the Remote Indicator Software	188
5.6.11. Setting the Conventional Sensor Calibration Reminder	189
5.6.12. Updating CodeLink® Software	189
5.7. Settings for Camera Sensors	189
5.7.1. Setting Up the Target Type	189
5.7.2. Setting Up the Target Cleaning Reminder	190
5.7.3. Setting Up the Alignment Reference	190
5.7.4. Ride Height During Roll	190
5.7.5. Setting Up the Alignment Bay Configuration	190
5.7.6. Setting Up the Compensation Procedure	191
5.7.7. Push From Left or Right Side	191
5.7.8. Setting Up the Emitter Flash Mode	191
5.7.9. Setting Up the Lighting Mode	191
5.7.10. Setting Up the Calibration Check Reminder	192
5.7.11. RackTrack Movable Camera Selection	192

5.8. Fully Integrated Alignment Options	193
5.8.1. Inflation Station Auto Close	193
5.8.2. Air Hose Warnings	193
5.9. Power Tools	194
5.9.1. Setting Up the Rear Shim Default Brand	194
5.9.2. Setting Up the Rear Shim Display Size	194
5.9.3. Setting Up the Front Bushing Default Brand	194
5.9.4. Setting up VirtualView	195
5.9.5. Setting Up VirtualView Caster Steer	195
5.9.6. Setting Up VirtualView WinToe	195
5.9.7. Setting Up Live or Manual Ride Height	195
5.9.8. Setting Up Tools and Kits Internet Ordering	195
5.9.9. TPMS Enable/Disable	196
5.10. Inspection	196
5.11. Date and Time	196
5.11.1. Setting Up the 12 or 24 Hour Clock Display	197
5.11.2. Setting Up the Date Format	197
5.12. Aligner Equipment	198
5.12.1. Setting Up the Remote Control Channel	198
5.12.2. Setting Up the Logging Type	198
5.12.3. Automatic Reboot of Windows	198
5.12.4. Setting Up Shutdown Windows on Exit	199
5.12.5. Enable Quick Check® Key on the Logo Screen	199
5.13. Transmitting Measurements	199
5.13.1. Setting Up the Transmit Measurements Destination	199
5.13.2. Setting Up the Transmit Measurements Format	200
5.13.3. Automatically Transmit Measurements	200
5.14. Work Management	200
5.14.1. Setting Up the Work Order Format	200
5.14.2. Setting Up the Custom Work Order Format	201
5.14.3. AutoVIN with Work Management and Custom Forms	202
5.15. Login	202
5.15.1. Setting Up the Logon Option	202
5.15.2. Setting up the Logon Registry	203
5.15.3. Setting Up the Logon Password	204
5.15.4. Setting Up Automatic Backup Options	204
5.16. Tread Depth	205
5.16.1. Setting up Tread Depth Specifications	205
5.16.2. Number of Tread Depth Measurements Per Tire	205
5.17. HunterNet® Items	205
5.17.1. HunterNet®: Enable/Disable	205
5.17.2. ShopResults.net	205
5.17.3. HunterNet® Data Collection	205
5.17.4. Send ShopResults After Compensation	205
5.17.5. Computer Network Routing	206
5.18. Quick ID Setup	206
5.18.1. Basic Setup	206
5.18.2. Advanced Configuration & Diagnostics	206
5.19. iShop Setup	207
5.20. asTech ADAS Device Set-up	208
6. Detailed Operation Information	209
6.1. Primary and Popup Screens	209
6.2. Log On	210
6.2.1. Types of Log On	210
6.2.2. Setup Items	210
6.2.3. Logging On	210
6.2.4. Logging Off	211
6.2.5. Log On Registry	211
6.2.6. Log On Password	211
6.3. Work Management Database	211
6.3.1. Work Management Overview	211
6.3.2. Custom Forms (Default Format)	212

6.3.3. Entering Customer Information	212
6.3.4. Edit Customer Information in Custom Forms	212
6.3.5. Edit Work Order in Custom Forms	213
6.3.6. Listing Work Orders	214
6.3.7. Adding a New Vehicle to a Customer ID	215
6.3.8. Saving the Current Work Order in Custom Forms	215
6.3.9. Exporting a Work Order in Custom Forms	215
6.3.10. Deleting a Work Order in Custom Forms	216
6.3.11. Managing the Database	216
6.3.12. Format 1	216
6.3.13. Entering Customer Information	216
6.3.14. Edit Customer Information	216
6.3.15. Edit a Work Order	217
6.3.16. Adding a Note	217
6.3.17. Recalling a Customer/Vehicle	218
6.3.18. Saving the Current Work Order	219
6.3.19. Recalling a Work Order	219
6.3.20. Switching Between Reference and Current Work Orders	220
6.3.21. Managing the Customer Database	220
6.3.22. Adding a New Customer	220
6.3.23. Adding a New Vehicle to a Customer	221
6.3.24. Changing the Customer	222
6.3.25. Deleting a Customer	223
6.3.26. Deleting a Vehicle	223
6.3.27. Deleting a Work Order	224
6.3.28. Filtering Data	224
6.3.29. Creating Form Letters	226
6.3.30. Printing Form Letters	228
6.3.31. Charting Alignments	228
6.3.32. Exporting Customer Database Files	229
6.3.33. Importing DBF Files	229
6.4. Vehicle Inspection	230
6.4.1. Point and Click Inspection Mode	230
6.4.2. Entering Vehicle Inspection	230
6.4.3. Setting the Status in Point and Click or Inspection Parts List	230
6.4.4. Context Sensitive Menus for Point and Click or Inspection Parts List	231
6.4.5. Printing Inside Point and Click	232
6.4.6. Sorting Options/Category	232
6.4.7. Parts List Inspection Mode	232
6.4.8. Selecting the Inspection Group & Sub-Groups	232
6.4.9. Show All Modes	233
6.4.10. Printing Selected Items and Illustrations	234
6.4.11. Including Illustrations in Printouts	234
6.4.12. Adding Notes to Printouts	234
6.4.13. Sample Printout	234
6.4.14. Sorting by Illustration	234
6.4.15. Sorting by Part Name	235
6.4.16. Toggling to the Parts List Screen	235
6.4.17. Toggling to Point and Click Inspection	235
6.4.18. Printing the Inspection Report	235
6.4.19. Cradle Inspection	235
6.5. Tools and Kits	236
6.5.1. Accessing Tools and Kits	236
6.5.2. Tools and Kits Screens	237
6.5.3. Using Tools and Kits Videos	238
6.5.4. Selecting Tools and Kits Manufacturers	239
6.5.5. Ordering Tools and Kits Online	239
6.5.6. Printing Reports	241
6.6. Transmitting Measurements for Auditing	241
7. ADAS and Collision Alignment	242
7.1. ADASLink Setup	242
7.2. Pre-Scan	242

7.3. ADAS Calibration with Pre-Scan	243
7.4. Collision Alignment Feature and Collision Repair Blueprint	245
7.5. Setup for Ultimate ADAS	247
7.6. Ultimate ADAS™ Calibration Procedure	247
7.7. Moving the Calibration Fixture	250
7.8. Moving the Cameras Up and Down	250
7.9. Ultimate ADAS Sensor Diagnostics	250
7.9.1. Gimbal Diagnostics	251
7.9.2. Actuator Diagnostics	251
7.9.3. Target Diagnostics	252
7.9.4. Camera Height Diagnostics	253
7.9.5. Version	253
8. Equipment Information	254
8.1. Conventional Sensors	254
8.1.1. Care and Cleaning of Conventional Sensors	254
8.1.2. XF Pod (DSP700 Series Sensors Only)	254
8.1.3. XF2 Pod (DSP700 Series Sensors Only)	254
8.1.4. Precautions for Systems Equipped with XF Cordless Sensors	254
8.1.5. Charging Conventional Sensor Batteries (XF Sensors Only)	255
8.1.6. Charging the Wireless Remote Indicator Battery	256
8.2. Camera Based and Ride Height Targets Care and Maintenance	258
8.2.1. Target Maintenance	258
8.2.2. Target Image Viewer	258
8.2.3. Care and Cleaning of the Targets	259
8.2.4. Ride Height Target Maintenance	260
8.2.5. Dirty Targets can Hinder Sensor Performance	260
8.2.6. Target Face Cleaning Instructions	260
8.2.7. Target Mounting Surface Cleaning Instructions	260
8.2.8. DSP600L Vertical Lift Control Unit	260
8.2.9. DSP600LP Lift Controls	261
8.2.10. Movable Cameras	261
8.2.11. Customizing & Setup	262
8.3. Remote Indicator	262
8.3.1. LED	262
8.3.2. Remote Indicator Models 30-418-1, 30-419-1, and 30-421-1	262
8.4. Digital-PHOTO Option	262
8.5. CD/DVD-ROM Handling Instructions	263
8.5.1. Replacing the CD/DVD-ROM in Systems That Have Tray Type Players	263
8.6. Mouse	263
8.7. WinAlign Backup/Restore	263
8.7.1. Backup and Restore Procedures	263
8.7.2. Backup Procedure	263
8.7.3. Restore Procedure	264
8.8. Electronic Keys	265
8.9. Conventional Sensor Calibration	265
8.9.1. Calibration General Information	266
8.9.2. Mounting DSP Sensors	266
8.9.3. Leveling the Calibration Fixture	266
8.9.4. Starting the Calibration Procedure	267
8.9.5. Procedure Basics	267
8.9.6. Selecting What to Calibrate	268
8.9.7. Performing the Calibration (Conventional Sensors)	268
8.9.8. Mounting Spacers for Camber and Caster Adjust Transducers (All Sensors)	269
8.9.9. Zero Calibration	269
8.9.10. Storing Calibration Results	269
8.9.11. Finishing Calibration	270
8.9.12. Calibration Fixture Adjustments	270
8.9.13. Mounting the Sensors on the Calibration Fixture	270
8.9.14. Leveling the Top Casting	270
8.9.15. Zero Calibration Using the Long Calibration Bar	271
8.9.16. DSP Sensor Preparation	271
8.9.17. Installing the Calibration Bar and Stands	271

8.9.18. Stabilizing the Calibration Stand	272
8.9.19. Mounting the DSP Sensors	272
8.9.20. Rotating the Calibration Bar	272
8.9.21. Performing the Zero Calibration	273
8.9.22. Reverse Sensor Test	273
8.10. Camera Based Sensor Calibration	274
8.10.1. Reverse Target Test	276
8.11. Inflation Station	277
9. Additional Information	278
9.1. Cradle Adjustment	278
9.1.1. Why Has the Cradle Become an Alignment Issue?	278
9.1.2. Is it Possible to Reposition a Cradle without Frame Equipment?	278
9.1.3. What are the Procedures for Properly Positioning a Cradle Assembly?	278
9.1.4. Definition of Cradle	278
9.1.5. Why are Cradle Assemblies Used?	278
9.1.6. What is the Proper Position for the Cradle?	279
9.1.7. What Happens if the Cradle is Out of Position?	279
9.1.8. Vehicles with Adjustable Cradle by Manufacturer	279
9.1.9. Camber and Steering Axis Inclination (S.A.I.) Angles	280
9.1.10. How Does the Cradle Position Effect Camber and S.A.I.?	280
9.1.11. What are the Effects of an Improperly Positioned Cradle?	281
9.1.12. Caster and Setback Angles	281
9.1.13. How Does the Cradle Position Effect Caster and Setback Angles?	281
9.2. Ride Height Specifications	282
9.2.1. Toe Change	282
9.2.2. Camber (Side-Slip)	282
9.2.3. Shocks and Struts	282
9.2.4. Rear Springs	282
10. Glossary	283
10.1. Alignment Types	283
10.1.1. Geometric Centerline Alignment	283
10.1.2. Thrust Line Alignment	283
10.1.3. Total Four-Wheel Alignment	283
10.2. Alignment Angles and Measurements	283
10.2.1. Camber	283
10.2.2. Caster	284
10.2.3. Frame Angle	284
10.2.4. Geometric Center Line	284
10.2.5. Included Angle (I.A.)	284
10.2.6. Individual Toe	284
10.2.7. Ride Height	285
10.2.8. Steering Axis Inclination (S.A.I.)	285
10.2.9. Thrust Angle and Thrust Line	285
10.2.10. Total Toe	285
10.2.11. Turning Angle	286
10.3. Symmetry Angle/Set Back Definitions	286
10.3.1. Front Set Back	286
10.3.2. Wheelbase Difference	286
10.3.3. Right Lateral Offset	286
10.3.4. Left Lateral Offset	287
10.3.5. Track Width Difference	287
10.3.6. Axle Offset	287
10.4. Advanced Vehicle Handling Values	288
10.4.1. Body Center Line Angle	288
10.4.2. Body Center Line Offset	289
10.4.3. Body Overhang	290
10.4.4. Body Roll Angle	290
10.4.5. Curb-to-Curb Distance	291
10.4.6. Rolling Force Lever	291
10.4.7. Turning Circle	292
10.5. Safety System Alignment (ADAS Systems) Glossary	292
11. Hunter's 3-Year Warranty	293

1. Getting Started

1.1. General Information

This manual provides operation instructions and information required to operate an aligner with WinAlign® software 17.x version or greater.

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

This manual assumes the user is already familiar with the basics of wheel alignment. Italics are used to refer to specific parts of this manual that provide additional information or explanation. For example, refer to *“Operating the Console [13].”* These references should be read for additional information to the instructions being presented.

1.2. System Requirements

WinAlign® software version 17.x is a 64-bit program that is compatible with only HW2 Series PCs or higher, with 4GB of RAM or higher running Windows® 10 or higher.

1.3. Inside Help Tips

The “HELP” key accesses an on-line, context-sensitive copy of this manual. The “HELP” soft key label is available on all screens, usually located in the **K4** key of the lowest menu level. If the “HELP” soft key is not present, press **Esc** until it appears. When **K4** is pressed, a pop-up screen appears with the question “What kind of help would you like?” The choices are:

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

1.4. For Your Safety - Hazard Definitions

1.4.1. Hazard Definitions

Watch for these symbols:



CAUTION

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



WARNING

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



DANGER

Immediate hazards, which will result in severe personal injury or death.

These symbols identify situations that could be detrimental to your safety and or cause equipment damage.

Read all instructions.

Read and follow all caution and warning labels affixed to your equipment and tools. Misuse of this equipment can cause personal injury and shorten the life of the aligner. Always use wheel chocks in front of and behind the left rear wheel after positioning a vehicle on the rack. Use caution when jacking the vehicle.

ALWAYS WEAR OSHA APPROVED SAFETY GLASSES. Eyeglasses that only have impact resistant lenses are NOT safety glasses. Wear non-slip safety footwear when performing an alignment.

Never stand on the aligner.

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

Wear proper back support when lifting or removing wheels.

Do not operate equipment with a damaged cord, or equipment that has been dropped or damaged, until a Hunter Service Representative has examined it. Never use the cord to pull the plug from the outlet. Grasp plug and pull to disconnect. If an extension cord is necessary, a cord with a current rating equal to or more than that of the equipment should be used. Cords rated for less current than the equipment may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.

Verify that the electrical supply circuit and the receptacle are properly grounded. To reduce the risk of electrical shock, do not use on wet surfaces or expose to rain.

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

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

Keep all instructions permanently with the unit. Keep all decals, labels, and notices clean and visible.

To prevent accidents and/or damage to the aligner, use only Hunter recommended accessories. Use only as described in this manual. Adequate ventilation should be provided when working on operating internal combustion engines.



DANGER

NOT FOR USE IN A COMPUTER ROOM AS DEFINED IN THE STANDARD FOR PROTECTION OF ELECTRONIC COMPUTER/ DATA PROCESSING EQUIPMENT, ANSI/NFPA 75. Ne peut être utilisé dans une salle d'ordinateurs telle que définie dans la norme ANSI/NFPA 75 Standard for Protection of Electronic Computer/Data Processing Equipment.



DANGER

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



DANGER

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



DANGER

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

SAVE THESE INSTRUCTIONS

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



DANGER

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



DANGER

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



CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS. RISQUE D'EXPLOSION SI LA BATTERIE DE REMPLACEMENT PAR UN TYPE INCORRECT. Jetez les piles usagées SELON LES INSTRUCTIONS.



CAUTION

Tread DepthTool: 221-731-1

Contains FCC ID: LS3-45-1443

IC: 2938A-451443

Model: 45-1443

OR

Contains FCC ID: LS3-45-1637

IC: 2938A-451637

Model 45-1637

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

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

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

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

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

supply cord set, supplied with this equipment, may need modification to allow connection to the power supply mains. Your Hunter service representative will install the proper plug for your location.



CAUTION

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

1.4.4. FUSING

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

1.4.5. EQUIPMENT SERVICE

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

1.4.6. PROVISIONS FOR LIFTING and CARRYING

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

Voltage:	120/230 volts (nominal)
Amperage:	6/3 amps
Wattage:	720 watts

1.4.7. Atmospherics

Temperature:	+32°F to +122°F (0°C to +50°C)
Relative Humidity:	Up to 95% Non-condensing
Altitude:	Up to 10,000 ft. (3048 m)

Explanation of Symbols

	Alternating Current
	Earth ground terminal
	Protective conductor terminal
	ON / OFF (Supply) condition
	Risk of electrical shock

1.4.2. North America

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

1.4.3. Other Regions

The PC aligner is intended to operate from a power source that will apply 230 VAC (nominal) 50/60 Hz between the supply conductors of the power cord set. The power

	Stand-by Switch
	Not intended for connection to public network

1.5. Operating the Console

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

Turn the unit "ON" by pressing the power switch located on the left side panel, or on the back panel of the aligner cabinet. The "Logo" screen will appear and indicate that the unit is ready for use.



To turn off the aligner power, do the following:

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

Reset the console.

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

Wait for the aligner program to end. The aligner will shut down automatically. Turn off console power.



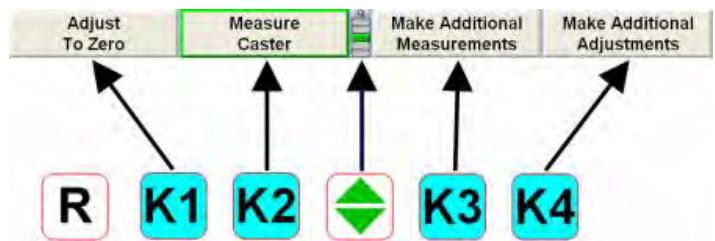
CAUTION

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

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

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

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



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

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

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

 K1 Key

 Forward key



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



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

Throughout this manual, the statement Press "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 softkeys have a green color. Generally, the softkey with the green color (usually K4) is the appropriate key to press to continue with the procedure being performed, as seen below.

Adjust Rear Camber & Toe

1.5.1. Alignment Procedure Bar



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

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

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

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

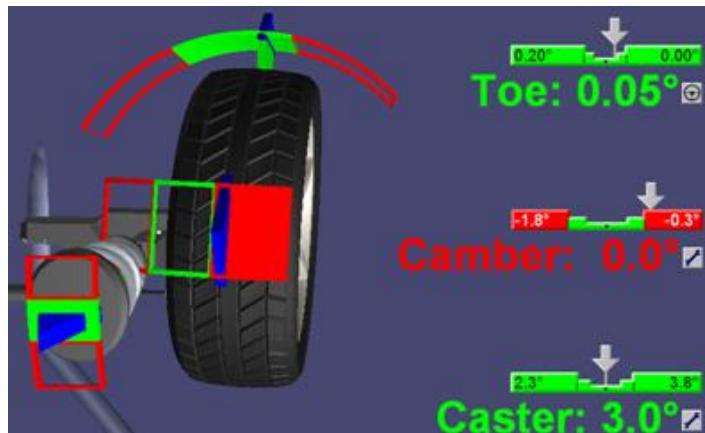
Selecting an icon from the Alignment Procedure bar will take you to the procedure that the icon represents. Selecting **Backward** key, or the **Forward** key, will move the screen backward or forward in the alignment procedure as outlined on the procedure bar.

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

1.5.2. Using the VirtualView Adjustment Feature

The VirtualView adjustment feature allows the user to view alignment angles in a 3-D perspective. This feature provides the user with a detailed view of the angles and their status in respect to alignment angle specifications and is reinforced with corresponding bar graphs. VirtualView is available for most measurements and adjustments screens, plus Rolling Compensation, CasterSteer, and WinToe®.

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



NOTICE

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

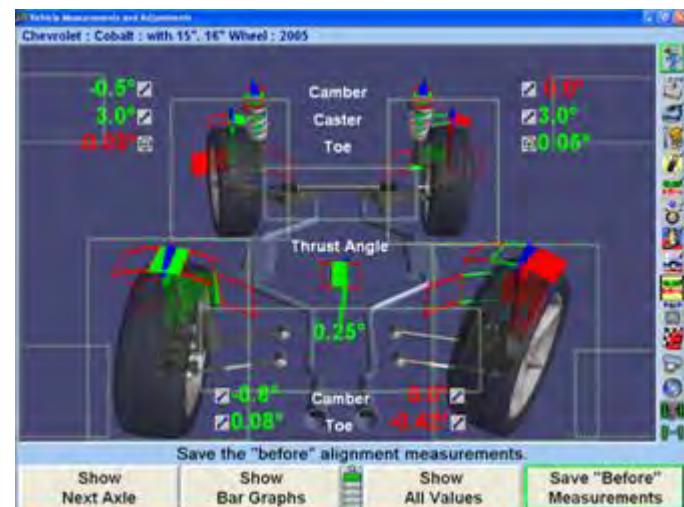
From the "Vehicle Measurements and Adjustments" screen, you may toggle between VirtualView with bargraphs, or bar graph-only measurements by pressing "Show Bar Graphs" from the softkeys.

VirtualView is the default "Vehicle Measurements and Adjustments" setting, however, may be disabled in "Aligner

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

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

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



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

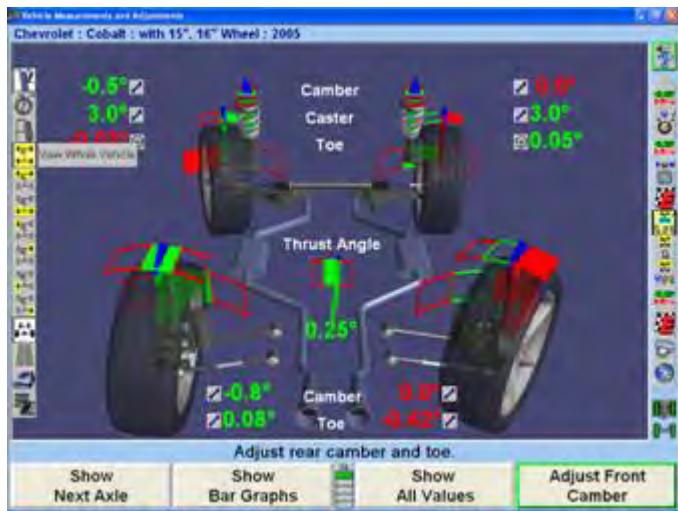


Right-click to return to the previous view.

When VirtualView® appears, the VirtualView Angle Selector on the left side of the screen will appear when the cursor

is moved over the left side of the screen, allowing you to select a variety of wheel and angle views.

Standard Monitor:



Standard Monitor



View Camber

View Caster

View Toe

View Whole Vehicle

View Front Axle

View Rear Axle

View Left Front Tire

View Right Front Tire

View Left Rear Tire

View Right Rear Tire

Show Main (Overhead) View

Show Road

Show Car Body

WideScreen Monitor

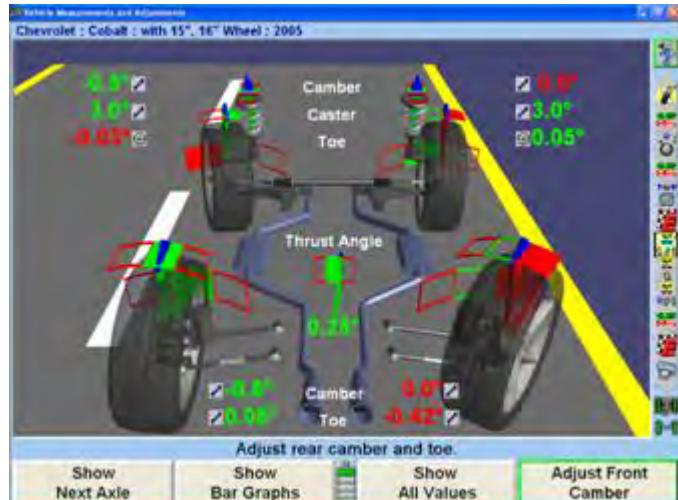


Widescreen Monitor:

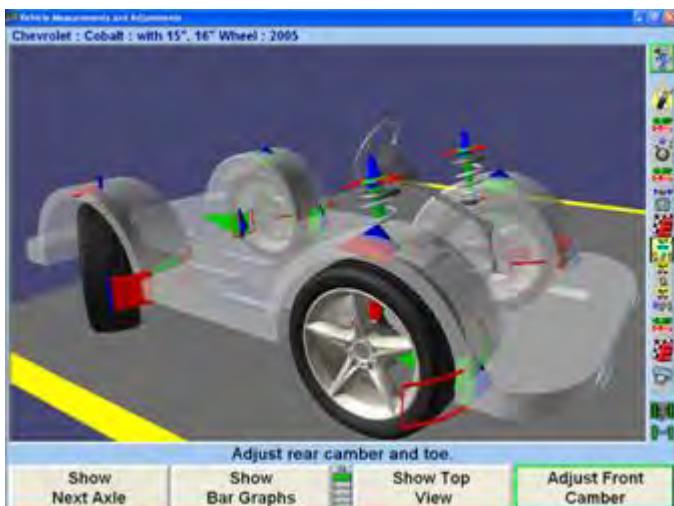


The VirtualView can be enhanced by adding the road image in relation to the vehicle and adding a view showing the car body.

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



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



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

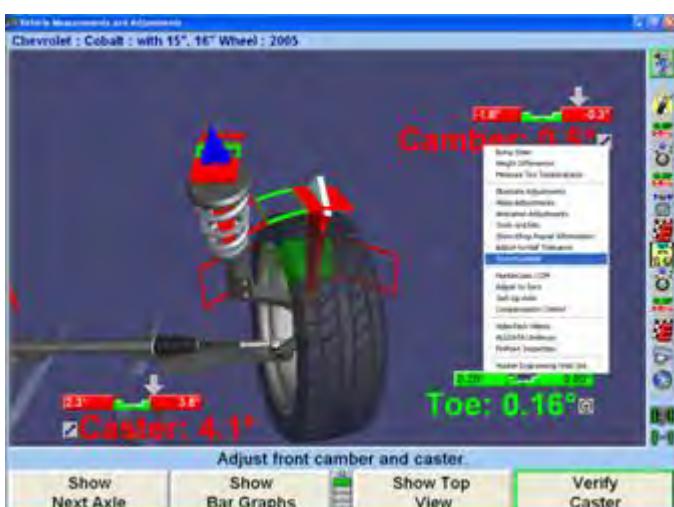
SoundGuide®,  is available on many screens including the caster measurement screen and WinToe®, or from drop-down menus on most screens, as shown below.

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

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

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

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





Select the appropriate choice and the video, animation, illustration, or Help item will display. The alignment program may be reset at anytime during an alignment by pressing the **R** key, located at the upper left-hand corner of the keyboard. A confirmation screen will appear to verify that the **R** button was pressed intentionally.



When this screen appears, press "YES" to reset the program or "NO" to continue working. When the aligner is reset, the information collected for the alignment in progress will be erased and the display will return to the "Logo" screen. The Hunter Video Library provides easy access to informational videos. To access the Hunter Video Library click on the "AlignGuide® Training and Information",  icon at the top of the procedure bar. Then select "Browse Videos."



The videos are sorted into four tabs:

Hardware Operation

WinAlign Operation

Alignment Fundamentals

Hunter Technology

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

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

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



NOTE

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

1.6. Using the Remote Indicator

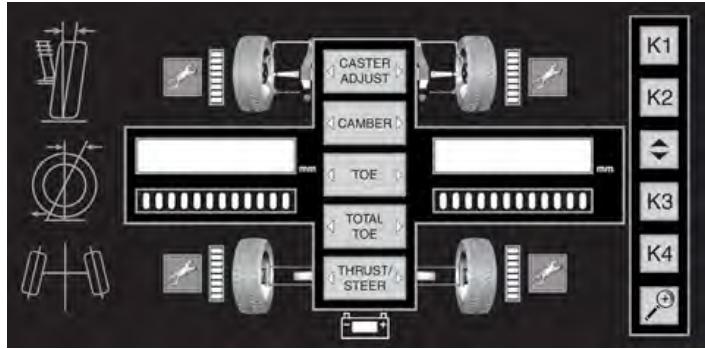
There are four remote controls available for use with the WinAlign® program, the Standard Remote or three versions of the Remote Indicator.

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

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

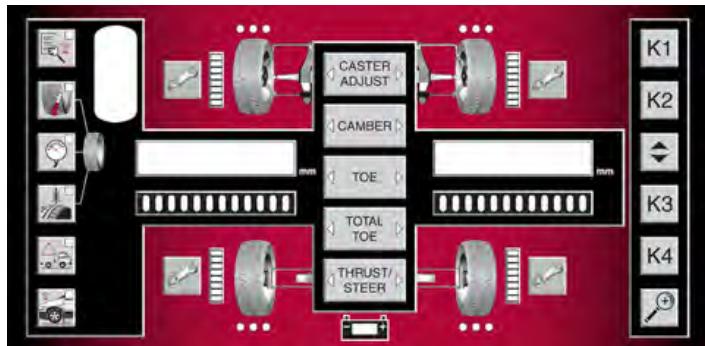
The Base model of the remote indicator displays alignment angles supplied by WinAlign alignment software, version 1.5.1 and greater.

- Base model, 30-419-1, is not capable of wireless communication.
- Base model, 30-421-1, is capable of wireless communication.



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

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



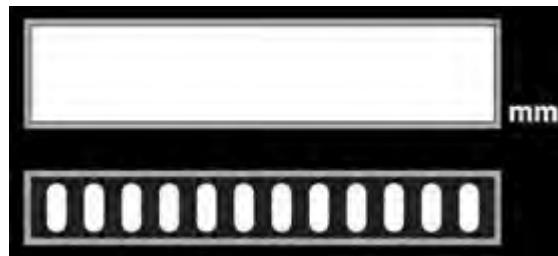
When using camera based sensors, the four bar graphs of eight LEDs stacked in a row located next to each wheel graphic indicate the status of the targets during compensation.



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

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

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



Turn the steering wheel to turn the LEDs from red to green. Pause as WinAlign® accepts measurement, then again turn the steering wheel as directed by indicator.

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

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

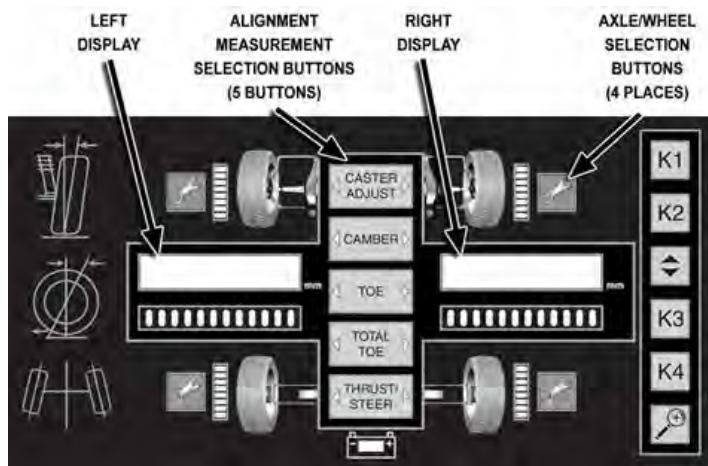
Using the left and right display, the remote indicator displays two alignment values. The availability of different display combinations depends on the version of WinAlign within the aligner console. Pressing the selection button of the desired alignment measurement repeatedly will change the display combination, if more than one combination is available.

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

Table 1. Available Display Combinations with WinAlign 9.0 or Higher

-	Cast er Adju st	Cam ber	Toe	Total Toe	Thru st Stee r
Caster Adjust	Yes	Yes	-	-	-
Camber	Yes	Yes	Yes	-	-
Toe	-	Yes	Yes	-	-
Total Toe	-	-	-	-	Yes

	Cast er Adju st	Cam ber	Toe	Total Toe	Thru st Stee r
Thrust Steer	-	-	-	Yes	-



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

Alignment values will appear in the left and right displays.

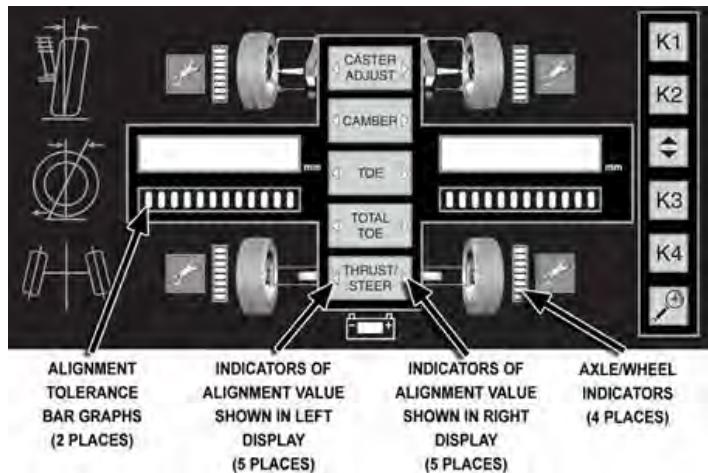
Negative values are indicated with a negative sign “-” on left side of display.

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

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

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

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



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

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

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

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

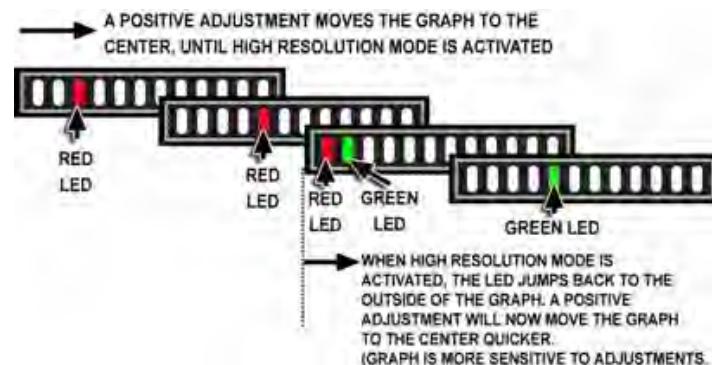
The “mm” illuminated indicates values displayed are in metric unit of millimeters.

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

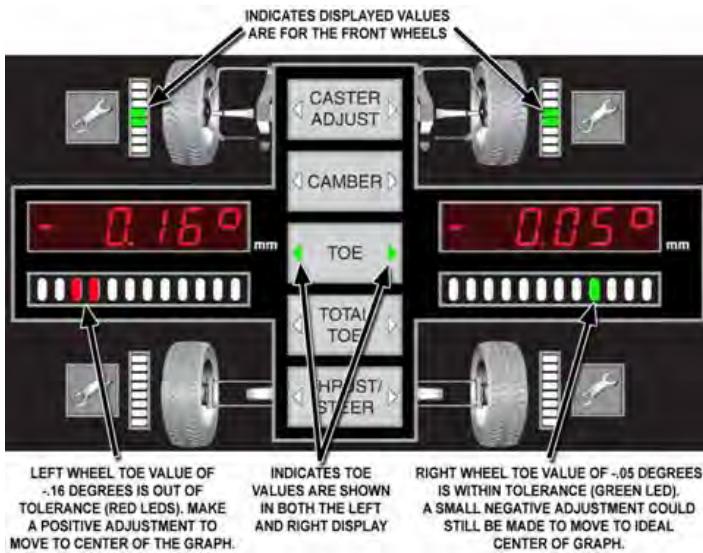
A red LED indicates the alignment value is out of the specified range. If located on the left side of the bar graph, a positive alignment adjustment is needed. If located on the right side of the bar graph, a negative alignment adjustment is needed.

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

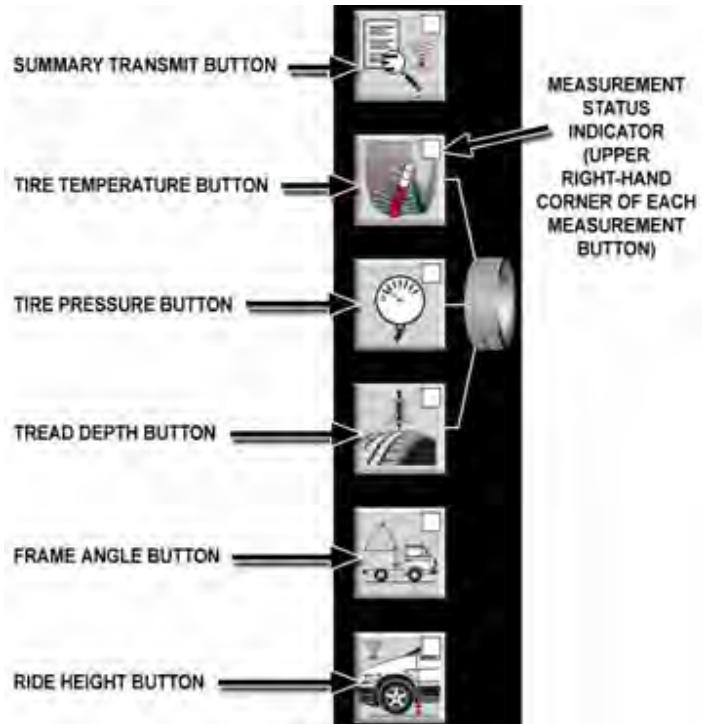
With WinAlign® 9.0 or higher, the bar graph will enter a mode of higher resolution when the measured value is close to being within tolerance. The bar graph will just represent the near tolerance and within tolerance region.



Individual Toe of Front Wheels: The display shows the left wheel toe is -16 degrees (out of tolerance) and the right wheel toe is -05 degrees (within tolerance).



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



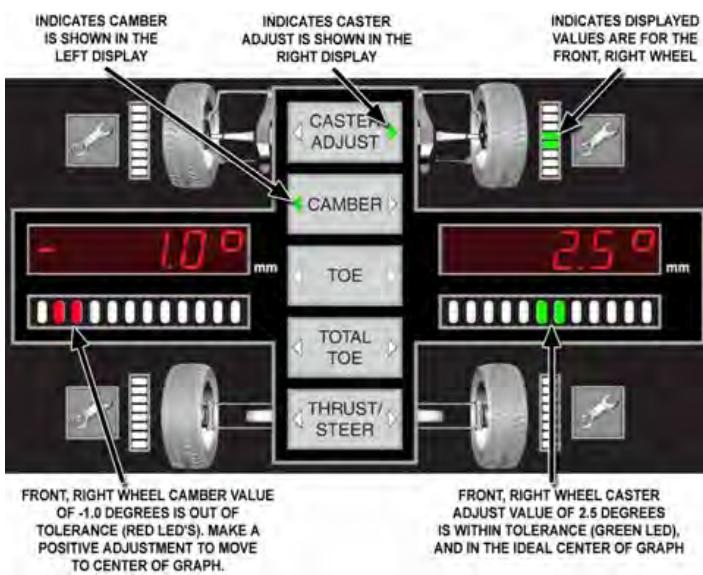
The green LED in the corner of each button indicates the status of the remote.

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

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

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

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



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



NOTE

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

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

Pressing any of the alignment angle buttons (caster adjust, camber, toe, total toe, or thrust / steer) will end

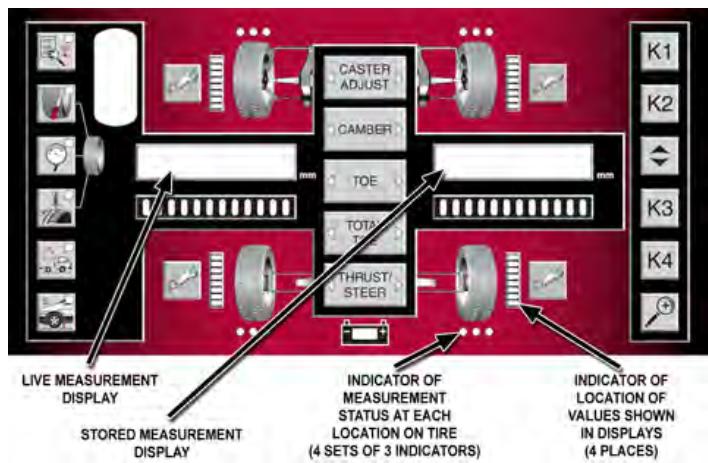
a measurement mode and return the remote indicator to displaying alignment angles.



NOTE

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

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



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

Values may be further clarified by the following symbols: Negative values are indicated with a negative sign “-” in the left side of the display.

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

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

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

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



NOTE

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

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

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

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

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

The green LED dots located above or below the wheel graphics further indicates the location of the displayed measurement and also the presence of stored values. When a tire temperature or tread depth measurement is displayed, the location on the tire (outside edge, center or interior edge) is indicated by which of the three dots is flashing.

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

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

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

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



NOTE

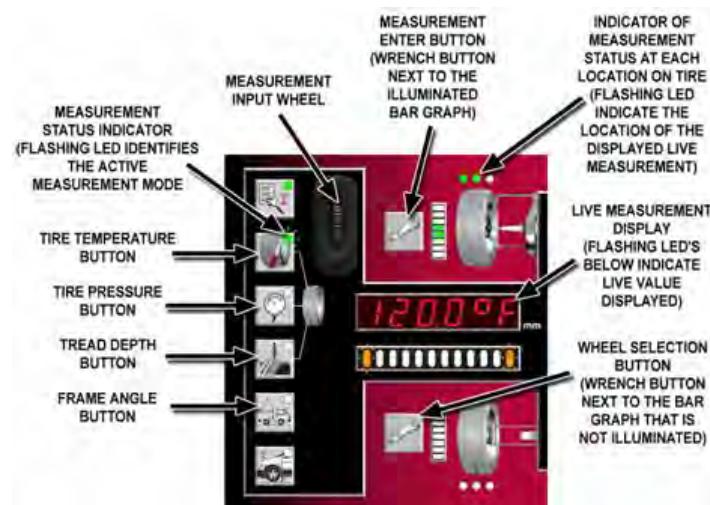
When the ride height measurement mode is selected, only the LED in the corner of the ride height button is flashing to identify the active measurement mode. No other LED indicators are used to identify location or presence of stored values, because the remote indicator does not store ride height values. For ride height operation instructions, refer to “[Measuring Ride Height. \[84\]](#)”



NOTE

The remote indicator does not store ride height values. For ride height operation instructions, refer to “[Measuring Ride Height.](#)”

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



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

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

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



NOTE

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

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

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

Refer to the particular instructions for each measurement type.



Select the tire temperature button. Identify the location for displayed "live" measurement as indicated by the LED

indicators. Each single green LED dot located above and below the wheel graphics represents a location on the tire: outboard, center and inboard.



NOTE

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

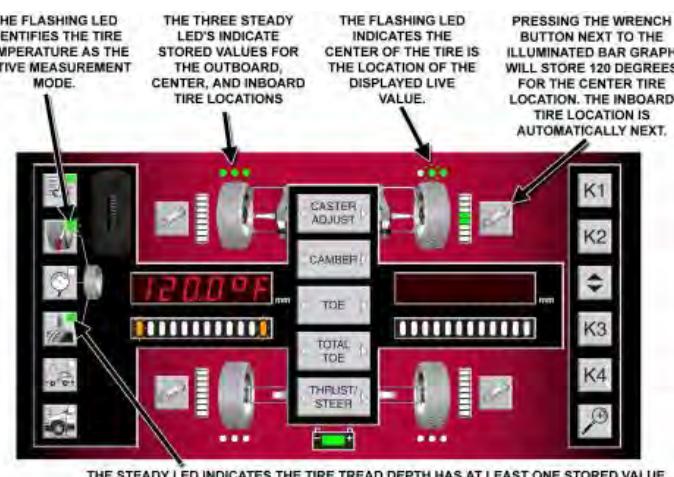
Use either the remote's thermocouple to measure the temperature or use another temperature gauge to measure and then dial-in the value with the input wheel.

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

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

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

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



Select the tire pressure button.

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

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

With the "live" measurement on the left side displaying the desired value, press the wrench button next to the illuminated bar graph to store the value. Move to another tire by pressing the tire pressure button to advance to the next location or by pressing wrench button next to bar graph that is not illuminated.

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



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

Use a tread depth gauge to measure the tread depth at the indicated location and then dial-in the value with the input wheel. With the "live" measurement on the left side displaying the desired value, press the wrench button next to the illuminated bar graph to store the value.

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

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

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



Select the frame angle button.

Identify the location for displayed "live" measurement as indicated by the LED indicators on the remote. The set of

six green LED dots located above and below the wheel graphics represents the side of the vehicle.

Position the remote on the vehicle to measure the angle. The built-in angle sensor will measure and display the frame angle. With the "live" measurement on the left side displaying the desired value, press either wrench button next to the illuminated bar graphs to store the value.

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

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

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

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

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

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



NOTICE

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



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



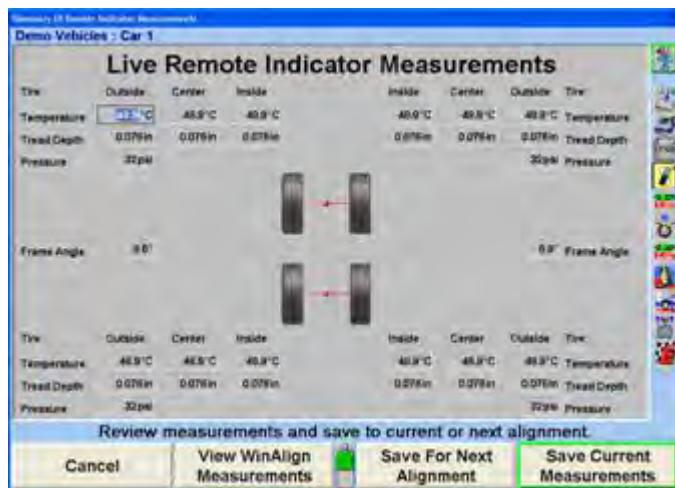
NOTICE

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

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

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

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



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

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

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



NOTICE

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

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

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

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



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



NOTICE

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

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



NOTICE

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

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

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

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

The standard aligner console remote control provides operation of the WinAlign® program from a distance by duplicating the five softkeys. Some remote controls have six softkeys **K1**, **K2**, **K3**, **K4**, **▲**, and a zoom key **+**. Pressing **+** will zoom screens that support the zoom feature.

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



NOTICE

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

2. Basic Operation Information

2.1. Sensors and Targets

2.1.1. TD Target Alignment Reflectors and QuickGrip Adaptors

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

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

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

TD Target® Alignment Reflectors



Vehical Corner

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

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

Target Set Assignment

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

2.1.2. Wide Angle Target

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

Wide Angle Measurement

Toe Out On Turns

20° Caster Sweep

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



2.1.3. Standard or QuickComp Roll-Forward Compensation

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

Standard Compensation

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



Center of Wheel
on Center of Turnplate



Leading Edge of Tire
at Center of Turnplate

To configure the TD Target for standard compensation: Loosen knob in center of TD Target. Rotate TD Target until the number on the vehicle ID decal and the number in either of the two right windows is the same.



Tighten knob in center of TD Target

QuickComp Roll-Forward Compensation

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

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

Loosen knob in center of TD Target.

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



Tighten knob in center of TD Target

2.1.4. Hook Options

Small 20" to 26" O.D. Tires



Medium 25" to 32" O.D. Tires



Large 29" to 37" O.D. Tires



QuickGrip Adaptor Tire Hooks

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

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.



2.1.5. Placing QuickGrip Adaptor on Wheel

Typical Wheels

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



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





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

Truck Dually Wheels and Deep Dish Wheels

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



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

Mount the QuickGrip Adaptor with the spacer on the wheel.

Mounted on front axle of dually truck wheel.



Mounted on rear axle of dually truck



2.2. Self-Centering Adaptors and Targets

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

2.2.1. Mounting Sensors or Targets onto Wheel Adaptors

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

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

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



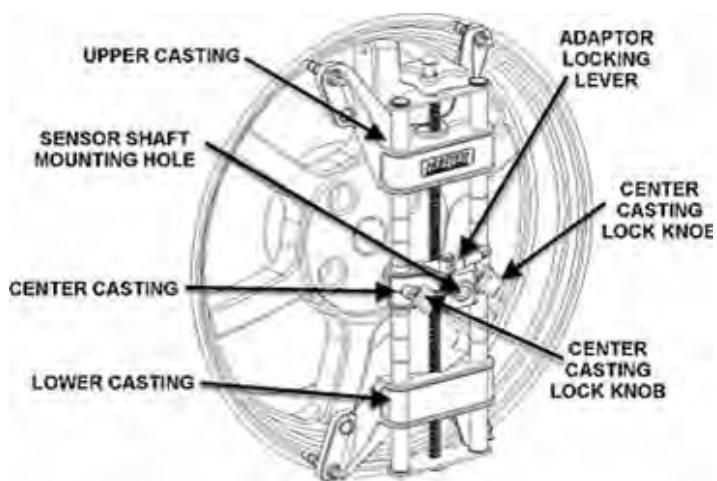
WARNING

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



WARNING

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



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



NOTICE

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

Wheel Adaptor 175-285-1

Rotate the adaptor locking lever clockwise to the locked position.



WARNING

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

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

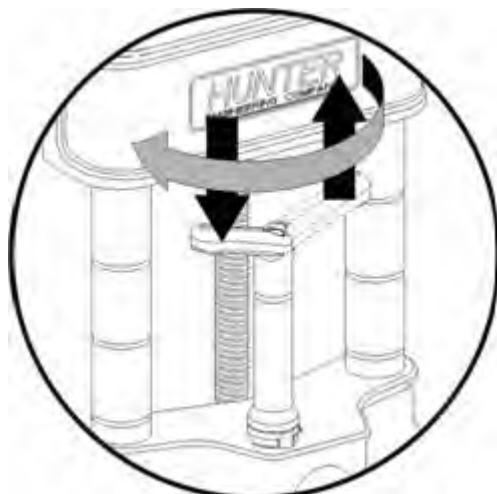
Wheel Adaptor 175-321-1 with Ratchet Adaptor Locking Lever

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

Proceed until the shaft is locked tight to adaptor.

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

Re-position lever to 9 o'clock



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

Operation of Ratchet Adaptor Locking Lever after Initial Setup

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

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



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

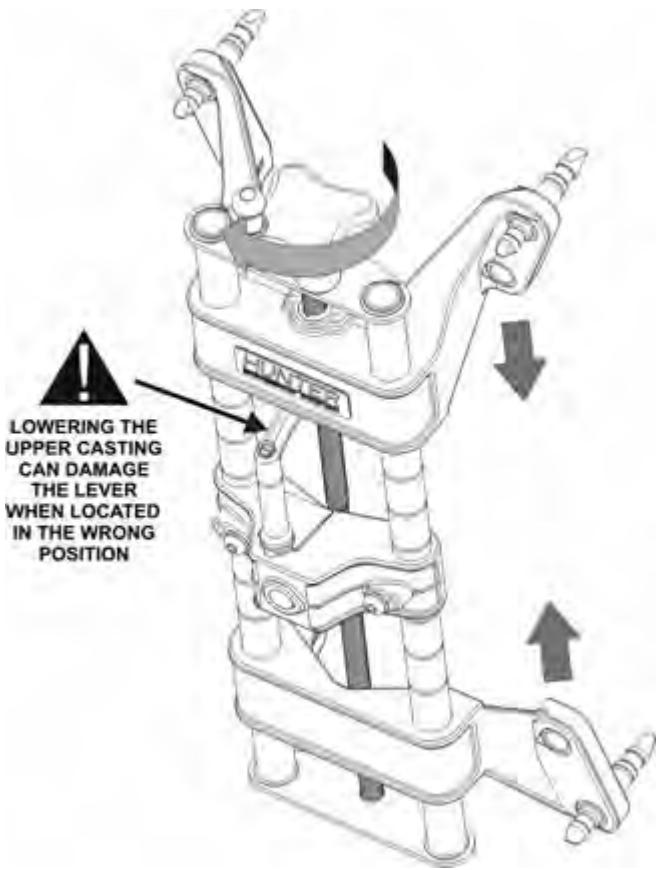


To lock the sensor or target, tighten the lock by turning the lever clockwise to 9 o'clock position.



WARNING

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



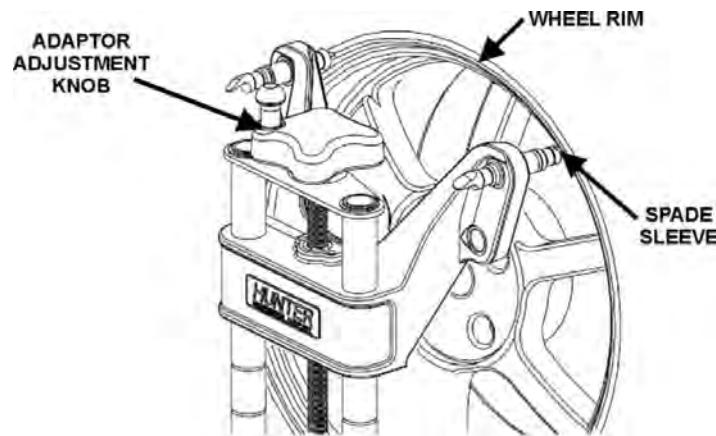
2.2.2. Mounting Wheel Adaptor onto Wheels

Wheels without Rim Lip (Attaching to Outer Rim Lip)

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

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

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



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



WARNING

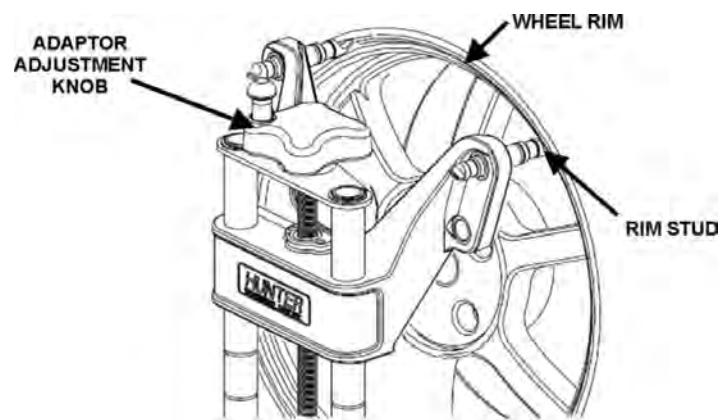
Do not allow the rim studs to slip on the wheel. Runout compensation and alignment accuracy will be adversely affected if the wheel adaptor is allowed to slip on the wheel.

Wheels with Rim Lip (Attaching To Inner Rim Lip)

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

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

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



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



WARNING

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



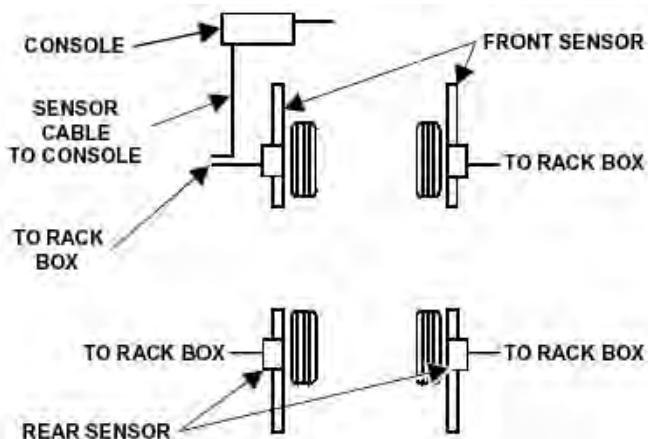
WARNING

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

2.2.3. Connecting Sensor Cables with Optional Rack Wiring Kit

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

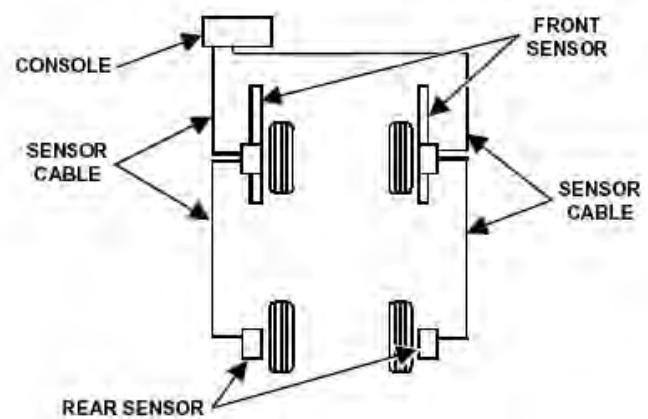
Connect a front rack wiring box to the console with a long sensor cable (any available connector may be used).



2.2.4. Connecting Sensor Cables without Optional Rack Wiring Kit

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

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



2.2.5. Compensating Conventional Sensors - General Compensation

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

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

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

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

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

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

Sensors may be compensated in any order; however, these precautions must be followed: If a sensor is removed from a wheel, that sensor must be re-compensated when reinstalled. The other sensors do not need re-compensation.

During 2-point compensation and normal operation of conventional sensors, be certain no obstructions are blocking the infrared beams between sensors. Should a blockage occur, the affected sensor(s) shown on the illustration on the monitor will flash on and off and the displayed toe measurement of the sensor(s) will go blank until the obstruction is cleared.

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

The lift rack should be level on leveling legs.

3-Point Compensation

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



WARNING

Chock wheels on axle not being raised during compensation to prevent vehicle from rolling.

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

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

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

Loosen the sensor lock knob.

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



NOTICE

It is recommended that the front wheels of front wheel drive vehicles be rotated in the forward direction to keep from disturbing the sensor on the opposite front wheel.

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

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

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

Loosen the sensor lock knob.

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



NOTICE

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

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

Apply the parking brake and place the transmission in park. Lower the vehicle onto the turning angle gauges.

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

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

Continue the alignment procedure.

2-Point Compensation



NOTICE

To compensate the sensors, both the front and rear sensor on that side of the vehicle must be mounted and the longitudinal toe beam must not be obstructed. If two sensors (on the same side of the vehicle only) are to be compensated at the same time, the wheels should be rotated at the same time. Do not rotate one wheel while the measurements are being saved at the other. The preferred method is to compensate the sensors separately.

Raise either the front or rear wheels of vehicle.



WARNING

Chock wheels on axle not being raised during compensation to prevent vehicle rolling.

Loosen the sensor lock knobs of all the sensors.

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

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

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

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

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

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

Loosen the sensor lock knob.

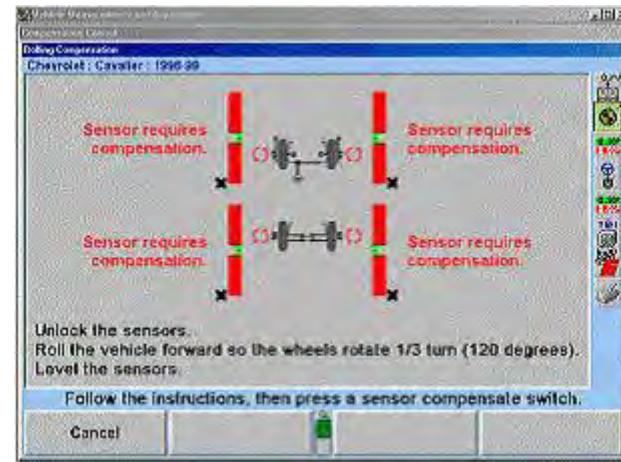
The sensor is now compensated. Repeat this procedure for the remaining sensor(s).

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



NOTICE

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



Rolling Compensation for Conventional Sensors - 3-Point Procedure

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

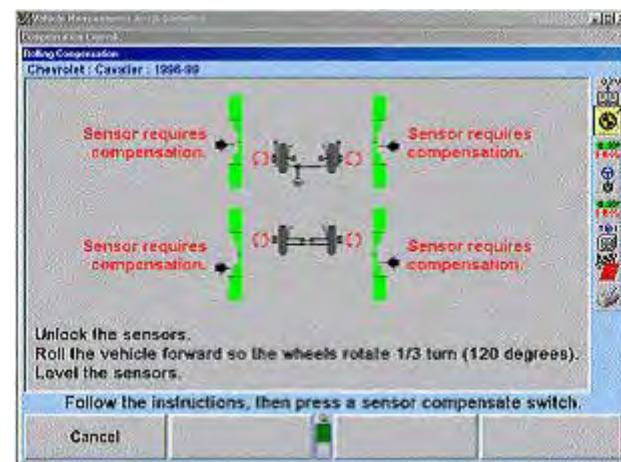
Level and lock the sensors, then press "Ready". When the sensors are stable, the measurements will be saved.



NOTICE

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

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



NOTICE

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



WARNING

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

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

Level and lock the sensors. The green LED must be on at each sensor. Press and release the compensate switch on any ONE sensor. When the sensors are all stable, the measurements will be saved.

The screen instructs you to roll the vehicle forward so the wheels rotate 120 degrees. Vertical bar graphs show

when this is correct. Unlock the sensors and roll the vehicle forward until the arrows are in the null position.

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

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



NOTICE

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

Procedure Limitations



WARNING

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

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

2.2.7. Compensating Camera Based Targets

General Compensation

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

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

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

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

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

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

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

About Rolling Compensation

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

Perform a vehicle inspection before beginning alignment

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

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

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

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

Properly set tire pressure before performing procedure.

Changing to Live Planes within WinAlign® software will compensate for improperly set tire pressure during the alignment. The vehicle's on-road performance will still be adversely affected by improper tire pressure.

Practices to follow for best results

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

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

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

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

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

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

Roll the vehicle by rotating the left rear tire. Changes in the vehicle's path and ride height are avoided by moving the vehicle with the left rear tire. The vehicle can also be rolled with the right rear tire if enabled in setup. Refer to "[Push From Left or Right Side \[191\]](#)".

Rolling Compensation

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



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

Steer ahead. Mount the Targets® and wheel adaptors on the wheels. Refer to "[Mounting Sensors or Targets® Onto Wheel Adaptors \[31\]](#)".



NOTICE

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



NOTICE

Beginning the rolling compensation procedure removes any previous compensation from the Targets®.



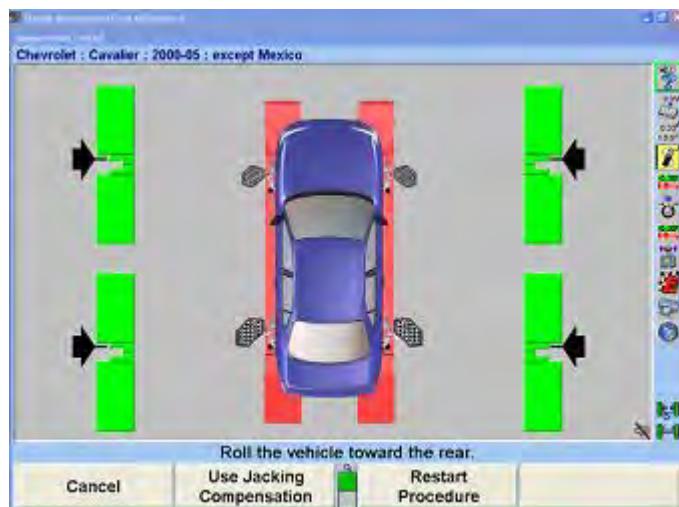
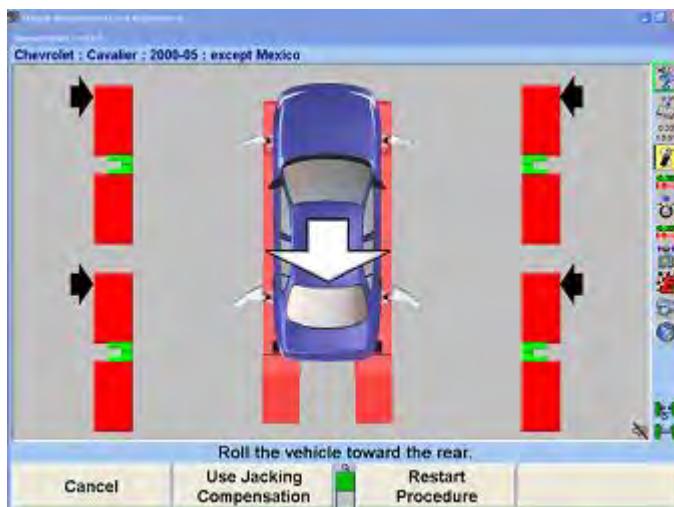
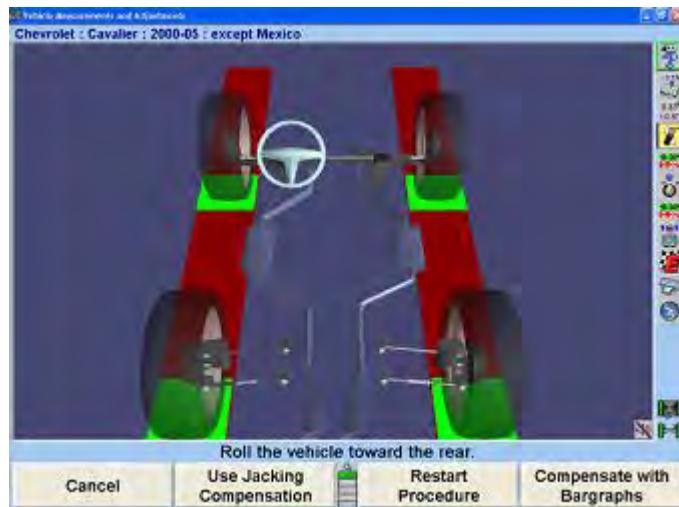
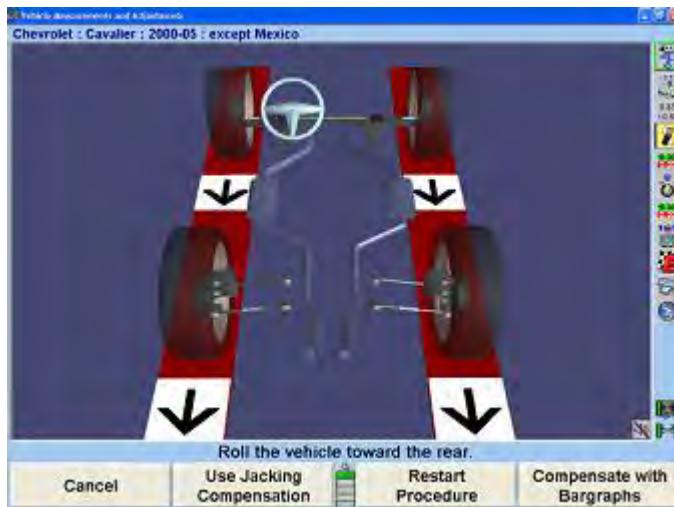
NOTICE

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

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



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



NOTICE

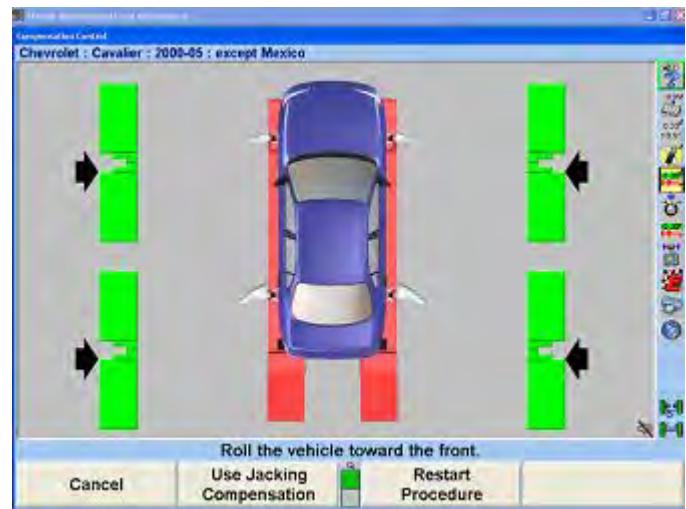
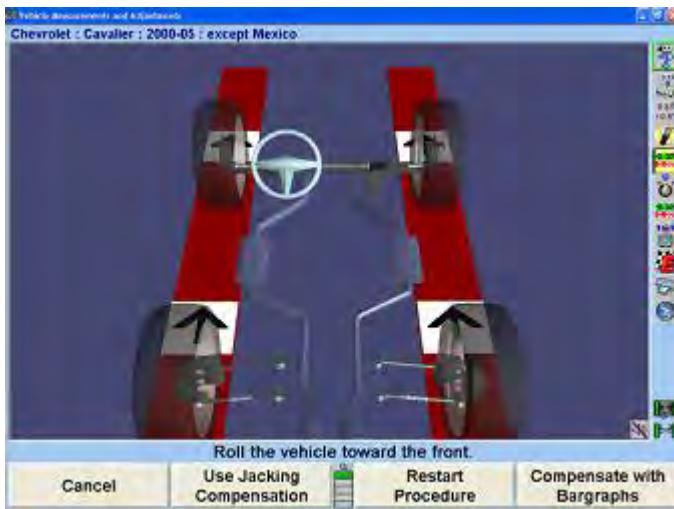
A vehicle with 28 inch diameter tires will require approximately 12-14 inches of movement. Smaller diameter tires will require less movement, while larger diameter tires will require more.

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

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

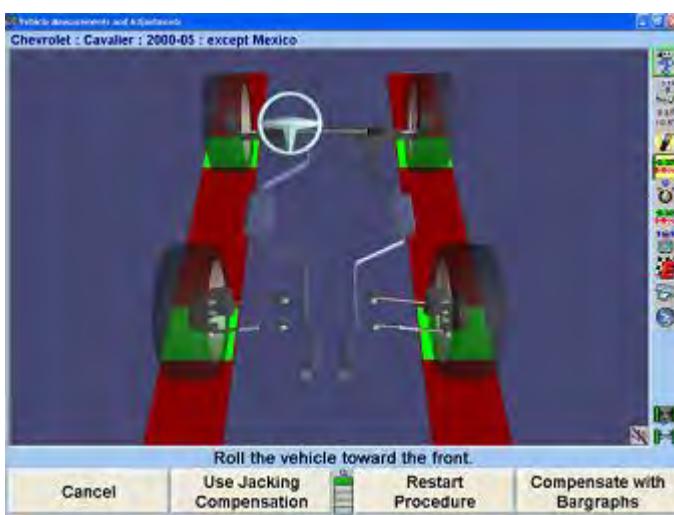
When the compensation bar graph (arrow) reappears, roll the vehicle toward the front until the bar graphs are green.

Roll Vehicle forward



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

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

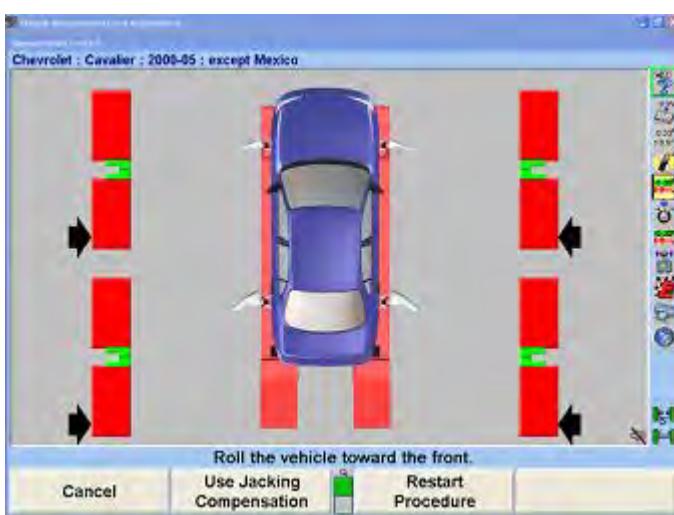


NOTICE

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

Roll forward, alternate view

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



If not already done, block the wheels, then remove the pins from the turnplates and slip plates. Remove or rotate the turnplate bridges so they are wider than tall.



NOTICE

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

Rolling compensation is complete.

2.2.8. Roll Check Measurement Feature

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

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



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

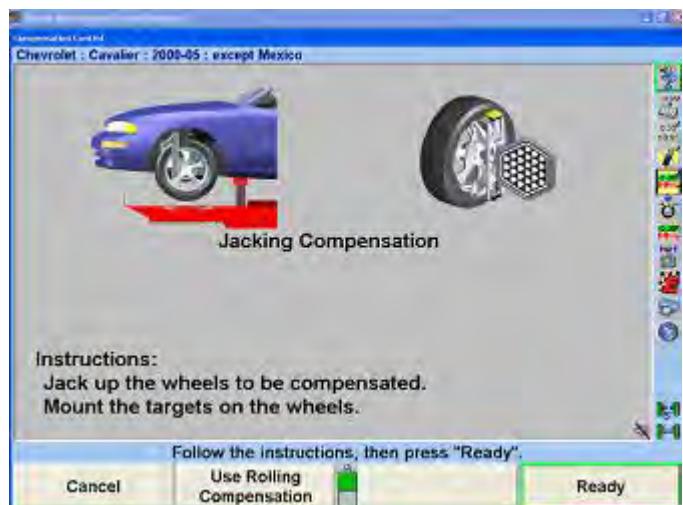
2.2.9. Jacking Compensation

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

If a target is removed from a wheel, that target must be re-compensated when re-installed. The other Targets® do not need re-compensation. When compensating Targets® that are mounted to the vehicle drive wheels, place the transmission in NEUTRAL.

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

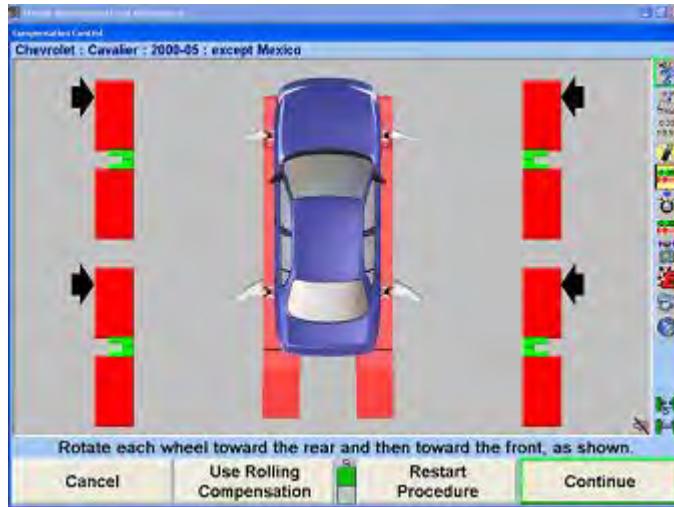
It is not necessary for all Targets® to be mounted before starting compensation. The Targets® may be mounted and compensated individually, or compensation may be performed on one, two, three, or all four Targets® at once.



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

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

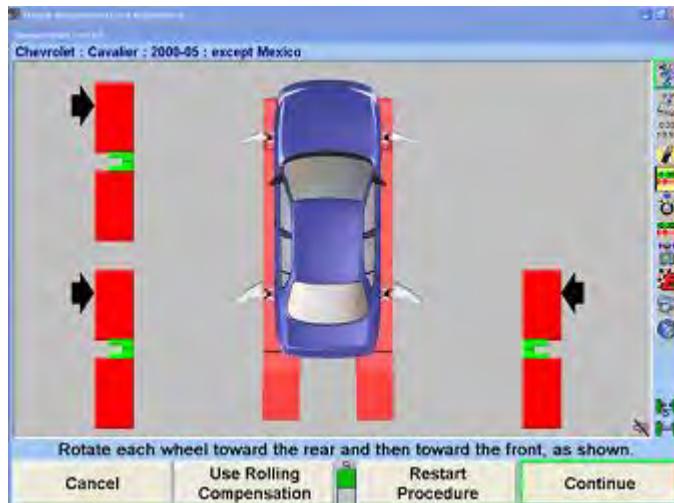
The screen will change as shown below.



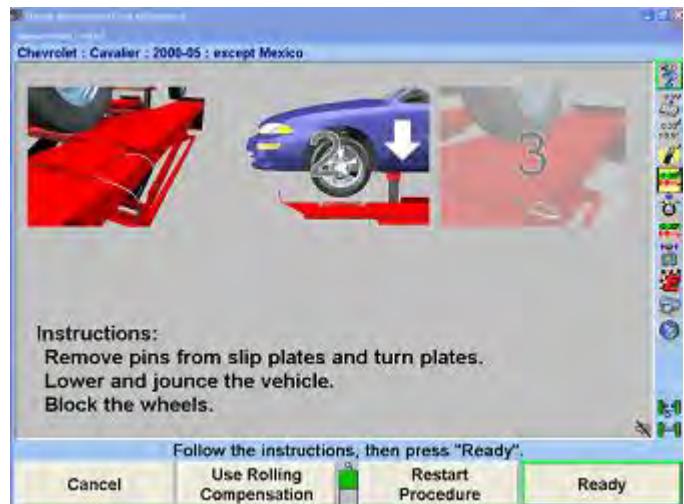
Rotate the wheel being compensated toward the rear of the vehicle (as if the vehicle were moving rearward).

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

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



The target is now compensated. Repeat this procedure for any remaining target(s). After the Targets® have been compensated, final compensation instructions will appear.



Remove the lock pins from the turnplates and slip plates.

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

Lower the vehicle onto the turnplates and rear slip plates. Jounce the vehicle.

Jacking compensation is complete.

2.3. Vehicle Specifications

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

Front	Spec.	Tol.
Left Camber	-0.20°	0.70°
Right Camber	-0.20°	0.70°
Cross Camber		0.70°
Left Caster	4.10°	0.75°
Right Caster	4.10°	0.75°
Cross Caster		0.50°
Total Toe	0.10°	0.20°
Left SAI	°	°
Right SAI	°	°
Cross SAI		°
Rear		
Left Camber	-0.25°	0.25°
Right Camber	-0.25°	0.25°
Cross Camber		°
Total Toe	0.20°	0.20°
Thrust Angle		0.25°

View or edit the specifications.

WinAlign-Tuner Procedure Recall Specifications Show Secondary Specifications Mount Sensors

This primary screen is displayed by pressing "Vehicle Specifications" on any other primary screen. To change to one of the other primary screens, change to the second row of softkey labels, and press the appropriate softkey. The "Vehicle Specifications" primary screen is used for the following purposes:

Viewing the identification of the vehicle.

Viewing the specifications of the vehicle. Manually entering the specifications of the vehicle.

The "Vehicle Specifications" primary screen is also used for:

Recalling vehicle specifications from the specification memory.

Storing vehicle specifications into the specification memory.

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

Setting the display units and formats for specifications and measurements.

2.3.1. Primary and Secondary Specification Groups

The specifications and tolerances are shown in two different groups:

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

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

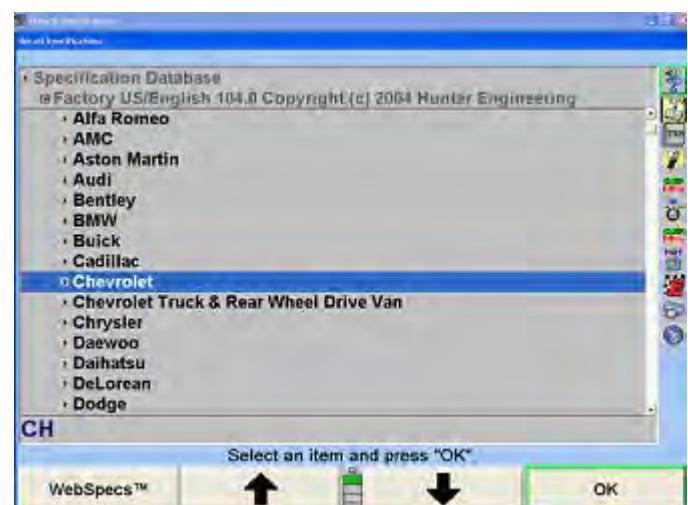


You may select "Show Primary Specifications" or "Show Secondary Specifications" from the "Vehicle Specifications" primary screen. "Secondary Specifications" displays both the front and rear axle. "Secondary Specifications" can be accessed from any primary screen where the "Show Vehicle Specifications"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

2.3.2. Vehicle Specification Memory

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

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

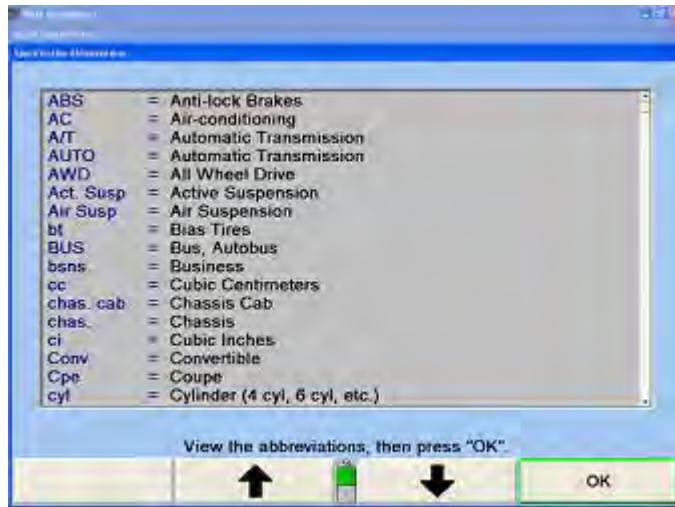


Specifications may be recalled from "Factory Specifications", based on original equipment manufacturer specifications, "Factory Amendments", or "User Specifications". "Factory Amendments", and "User Specifications" are created and stored into the computers memory by the equipment operator.

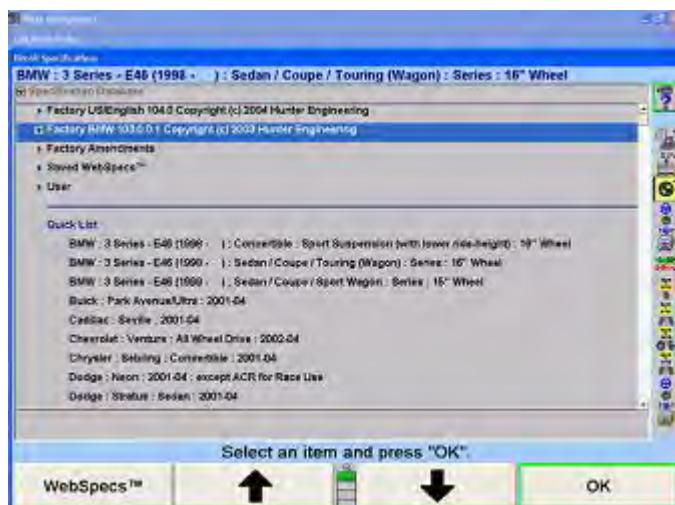
Although the specification database is extensive, some vehicle manufacturers and/or specific models may not be included in the factory specifications memory. Locate the alignment data in the alignment specification book or vehicle manufacturers' service manual and manually enter the specifications on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

The manually entered specifications may be stored in computer memory to be recalled at a later time. Refer to ["Selecting User Specifications. \[46\]"](#)

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



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



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

2.3.3. Vehicle Recall Specifications Selection

To recall the specifications from the specification database, begin by pressing \uparrow or \downarrow to highlight the

manufacturer of the vehicle being aligned. Press "OK" to select the highlighted manufacturer. The screen will change to show the models available for the selected manufacturer.



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

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

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

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

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

The four choices are:

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

2.3.4. Selecting from the Vehicle Lists

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

2.3.5. Selecting by Vehicle Identification Number (VIN)

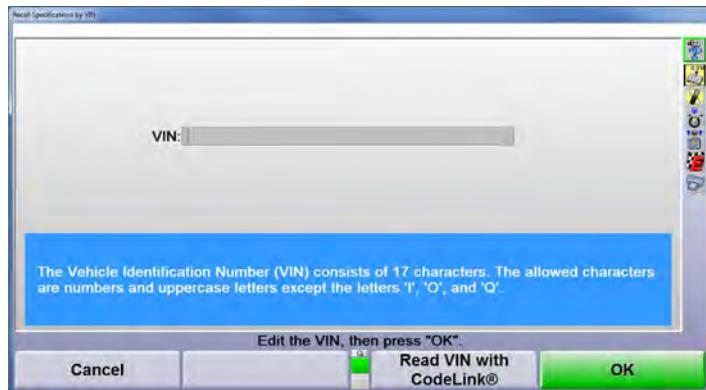
The seventeen-digit Vehicle Identification Number (VIN) contains coded information that the aligner software can use to recall the vehicle specifications.



NOTICE

Recalling vehicle specifications using VIN can be used for 1981 and newer U.S. light vehicles. This method will not work for most Heavy Duty vehicles (Class 7-8) and some Medium Duty vehicles (Class 4-6).

To recall vehicle specifications using the VIN, press "Recall by VIN#..." on the first "Vehicle Specifications" pop-up screen. The "Recall Specifications By VIN" pop-up will appear.



Scan then VIN barcode or QR code with the barcode reader. If AutoVIN™ is enabled in setup, scanning the VIN on the logo or compensation screens is recognized by WinAlign® which stores the VIN for specification recall. Refer to "[Setting Up AutoVIN \[172\]](#)™", for detailed instructions.



NOTICE

VIN barcodes are often located on the drivers door placard near the tire inflation information.

The seventeen-digit VIN can also be entered into this field using the keyboard.

Some VIN (numbers) may not contain enough information to completely describe a vehicle. If more than one vehicle is found, a list of vehicles will be displayed. The correct vehicle must be selected by highlighting the correct item and pressing "OK".

If the aligner software finds the VIN to be invalid, a screen with an error message will appear. Press "OK" and edit the VIN.

The VIN entered may have been misread when recorded from the vehicle or improperly entered. Verify the VIN and type again if an error was found.

If the message "Vehicle Not Found" appears on the screen, the program is unable to identify the required specifications according to the VIN that has been entered. If this occurs, the aligner will return to the "Recall Specification" display and the user will need to manually select the vehicle identification.

Once a vehicle has been identified, the program will retrieve the selected vehicles specification from the specification memory, as if the vehicle had been identified by the normal selection sequence.

Recalling the VIN Using CodeLink II



NOTICE

This feature is not compatible with first generation CodeLink® devices.



NOTICE

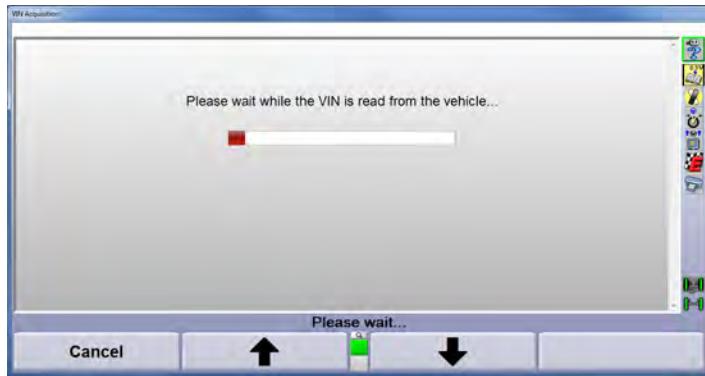
CodeLink® is to be plugged into the vehicle's DLC connector with the ignition OFF, follow the on screen instructions when connecting and disconnecting CodeLink®.

CodeLink® communicates with the console throughout the alignment process, but will only communicate with the vehicle and retrieve the VIN at the "Recall by VIN" screen.

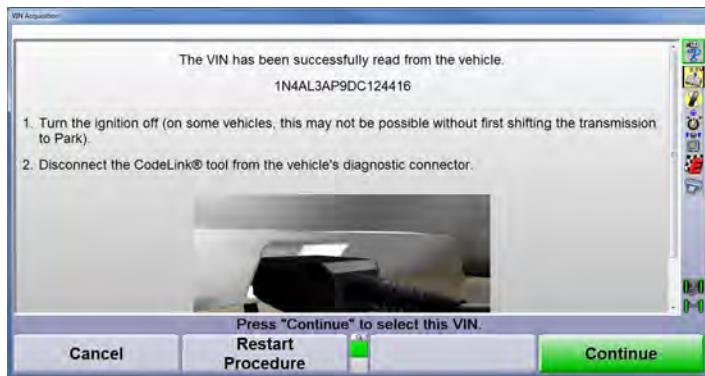
At the VIN recall screen, select "Recall VIN with CodeLink®"



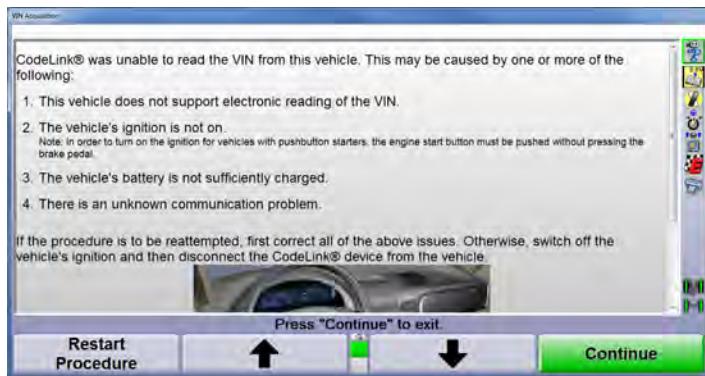
Follow the on-screen instructions, then select "Continue", CodeLink® will begin recalling the VIN.



If the scan is successful a screen will appear with the VIN, press "Continue" to proceed through the process.



If the scan is unsuccessful, a screen will appear with possible issues that may be causing the failure.



2.3.6. Selecting User Specifications

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

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

Press ↑ or ↓ to highlight Specification Database. Press "OK". The screen will change to a list of possible database selections.

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

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

2.3.7. Entering and Editing Specifications

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

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

Front	Spec.	Tol.
Left Camber	-0.20°	0.70°
Right Camber	-0.20°	0.70°
Cross Camber		0.70°
Left Caster	4.10°	0.75°
Right Caster	4.10°	0.75°
Cross Caster		0.50°
Total Toe	0.10°	0.20°
Left SAI		
Right SAI		
Cross SAI		
Rear		
Left Camber	-0.25°	0.25°
Right Camber	-0.25°	0.25°
Cross Camber		
Total Toe	0.20°	0.20°
Thrust Angle		0.25°

View or edit the specifications.

WinAlign-Tuner Procedure Recall Specifications Show Secondary Specifications Mount Sensors

Tolerances must not be 0.

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



NOTICE

Display units (i.e. degrees to inches, degrees to degrees and minutes, etc.) can be changed from the Vehicle Specifications primary screen. Refer to "Selecting Display Units [61]."

Use the Space key to separate whole numbers and fractions.

For example, $2\frac{1}{2}^\circ$ would be entered as,

Press 2, Spacebar, 1, /, 2 and "Select Next Value". Use the Space key to separate degrees and minutes.

For example, $2^\circ 15'$ would be entered as,

Press 2, Spacebar, 1, 5 and "Select Next Value". If the degrees and minutes specification is less than 1° , enter a 0 for degrees.

For example, 6' would be entered as,

Press 0, Spacebar, 6 and "Select Next Value".



NOTICE

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

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



WARNING

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

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

2.3.8. Selecting Specification Formats

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

	Specification	Tolerance
Left camber	0.50°	$\pm 0.25^\circ$

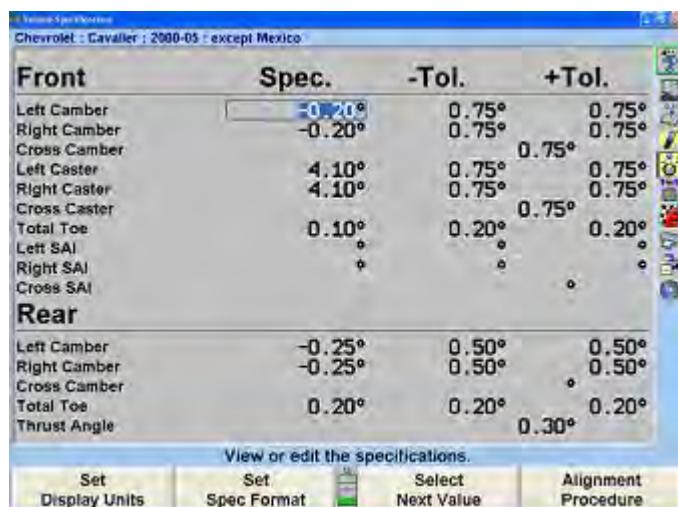
These are called symmetrical specifications because the tolerance range extremes are equal distance from the preferred specification. This permits a \pm value to be used as a tolerance and does not require two placeholders for tolerances. Symmetrical specifications are most common.

Non-symmetrical specifications use an unequal \pm tolerance such as:

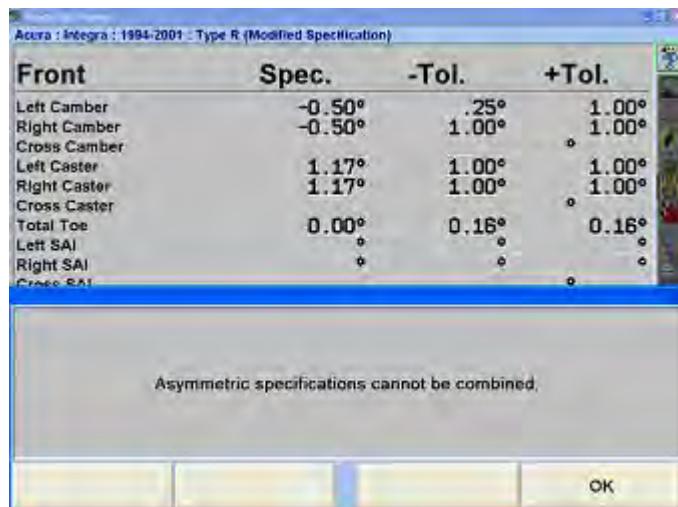
	Specification	+ Tolerance	- Tolerance
Left camber	0.50°	0.50°	0.30°

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

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



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



Press "OK" to clear this error message.

2.3.9. Reducing Tolerances

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

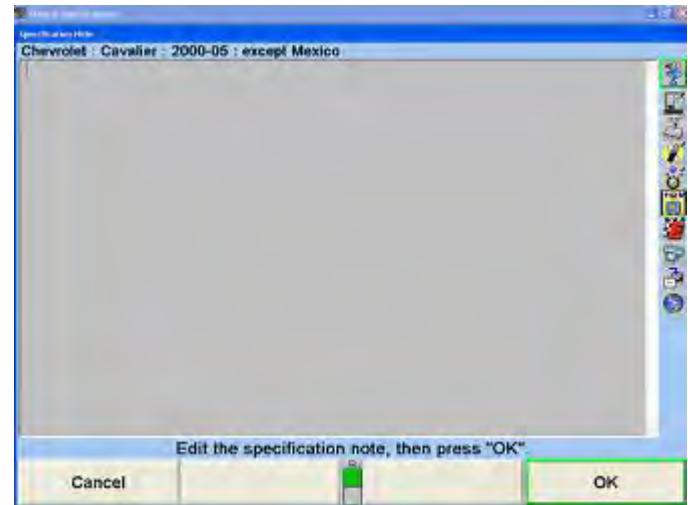
Pressing "Reduce Tolerances" will reduce the specification tolerances to the following:

Front and rear camber tolerance to $\pm 0.25^\circ$ ($1/4^\circ$),

Front caster tolerance to $\pm 0.50^\circ$ ($1/2^\circ$),

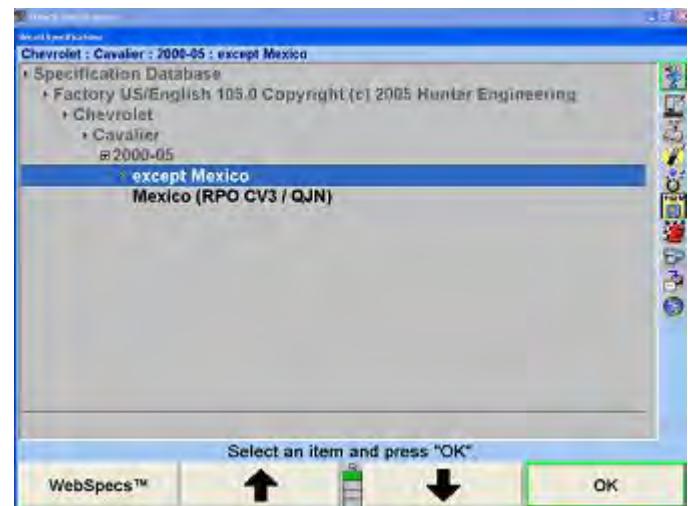
Front and rear total toe tolerance to $\pm 0.06"$ ($1/16"$, 0.13° or 1.5 mm depending upon toe units selected).

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



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

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



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

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

OR

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

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

2.3.11. Storing User Specifications

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

These specifications can take two forms:

They can be manually entered onto a blank specification screen. They can be derived from a factory specification by recalling and then editing the specifications for a vehicle.

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

If they were derived from a factory specification, they can be stored in "User" specification memory or they can

be stored in the "Factory" specification memory as an "Attachment" to the factory specification.

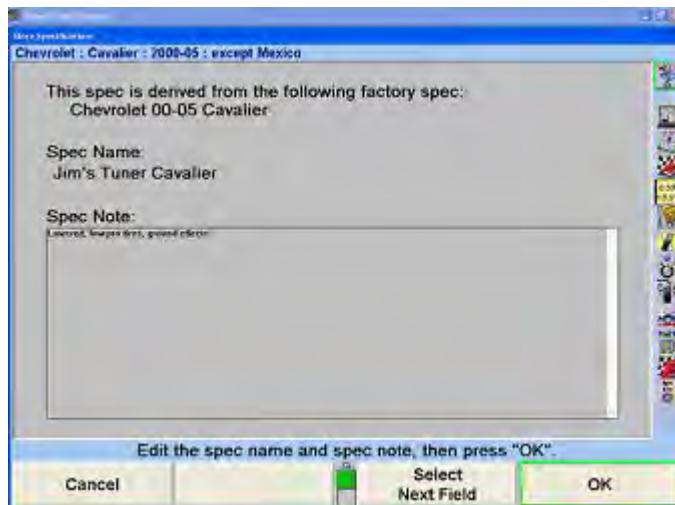
To store a specification:

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

OR

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

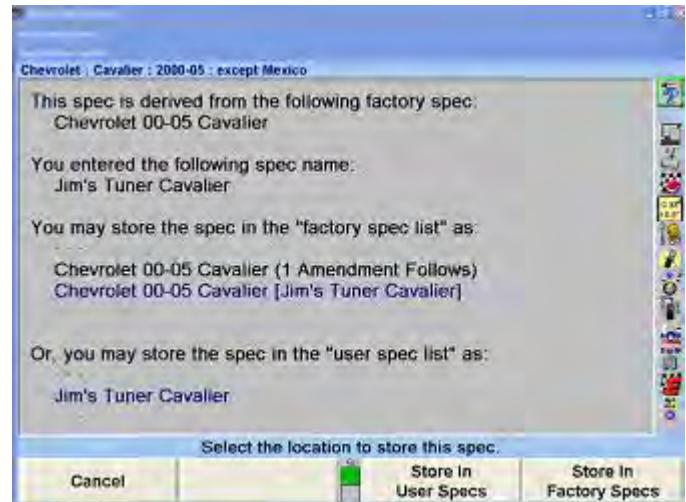
When the specifications are ready to store, press "Store Specifications". The "Store Specification" pop-up screen will appear.



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

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

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



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

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

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

For recalling User Specifications, refer to "[Selecting User Specifications \[46\]](#)".

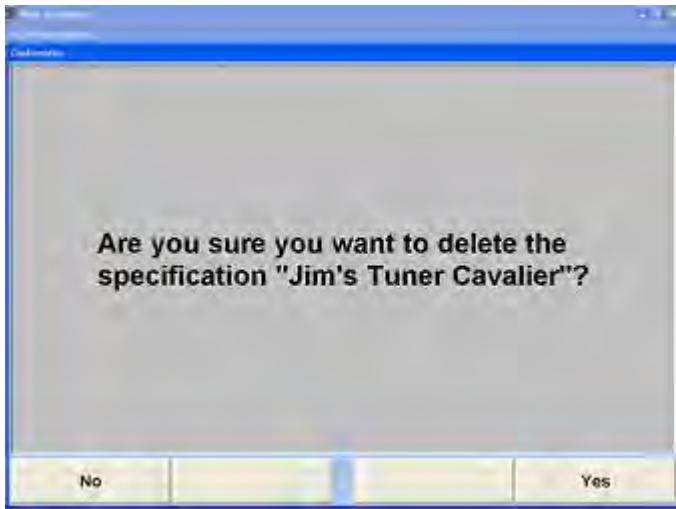
2.3.12. Deleting User Specifications

On the "Recall Specifications" screen:

Press ↑ or ↓ to select "Specification Database" and press "OK". The screen will change to a list of possible screen sequences.

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

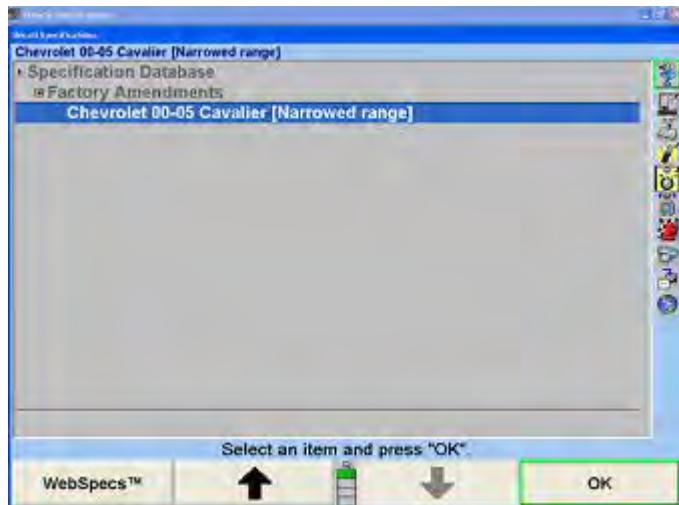
Press ← or → to move the cursor to the desired item and press "Delete Specification". The screen will ask for verification.



Press "Yes" or "No".

2.3.13. Factory Amended Specifications

"Factory Amended Specifications" are specifications that are derived from and stored with a factory specification. The procedure for doing this is discussed in, "Storing User Specifications." Select "Show Spec Databases". Then select "Factory Amendments". This displays all vehicles that have a Factory Amended Specification.



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

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

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

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

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

2.4. HunterNet®

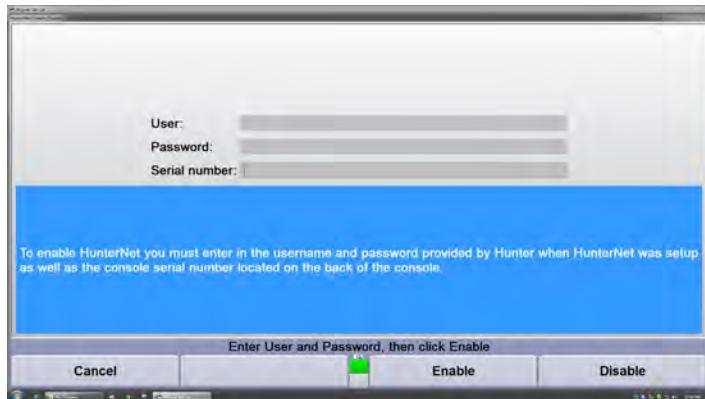
HunterNet® is a subscription based feature of WinAlign® software designed to report alignment and Quick Check® results. These results can be viewed by shop management, counter personnel, or emailed to the vehicle owner. Included with a HunterNet® subscription is the WebSpecs® online specification database.

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

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

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

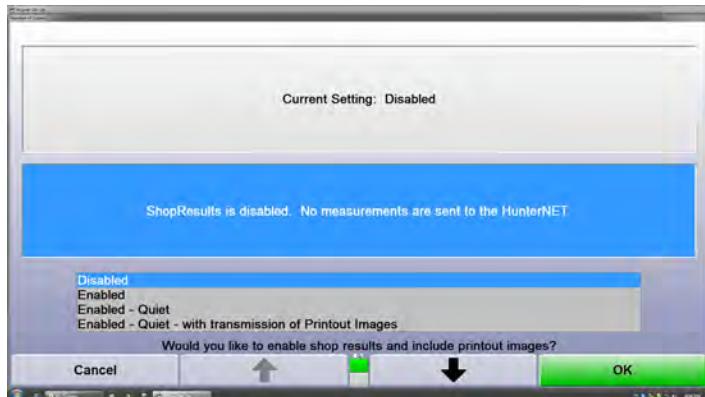
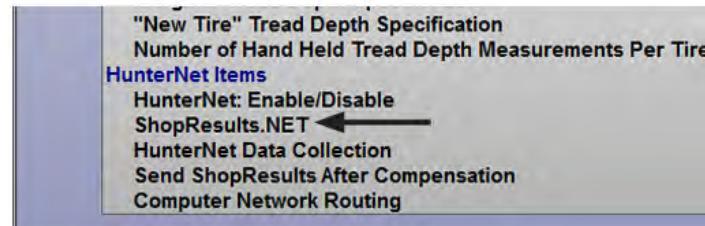
Upon activation, WebSpecs® is available for use and does not have to be enabled in setup. Refer to ["2.5 WebSpecs® Online Specification Database \[52\]"](#) on page 67 otherwise follow the setup procedure below to enable results to be uploaded to HunterNet® during the alignment or Quick Check® process. Enable HunterNet® using the login credentials provided, the console serial number is also required to enable HunterNet®.



2.4.1. ShopResults

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

ShopResults must be enabled within WinAlign®. Select "Service Programs" from the Logo screen. Select "Set Up Aligner". On the "Aligner Set-Up" screen, scroll down to "HunterNet® Items" and select "ShopResults.NET".



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

When Quiet ShopResults is enabled in setup, results are sent to HunterNet® automatically and in the background at the end of the procedure.

Enabling Quiet ShopResults with transmission of printout images will upload a .PNG file of the exact paper printout

generated the console, in addition to the standard set of results.

2.4.2. Sending Alignment Results to the Hunter Web Server



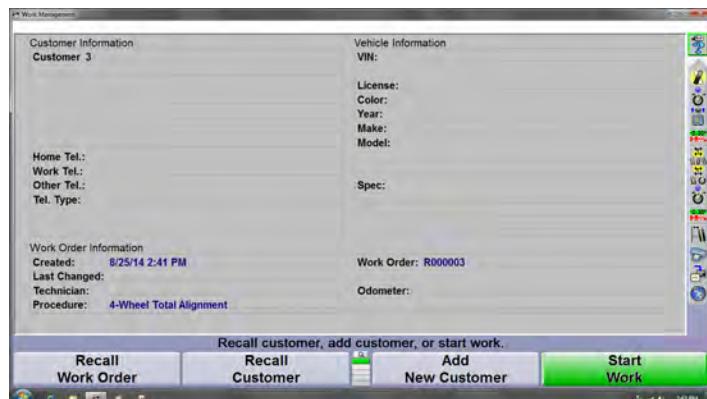
NOTICE

For best results, "Work Management" or "Edit Customer Identification" should be enabled by Setup as part of the Alignment Procedure. This streamlines the process adding the customer's information to the online viewable results automatically.

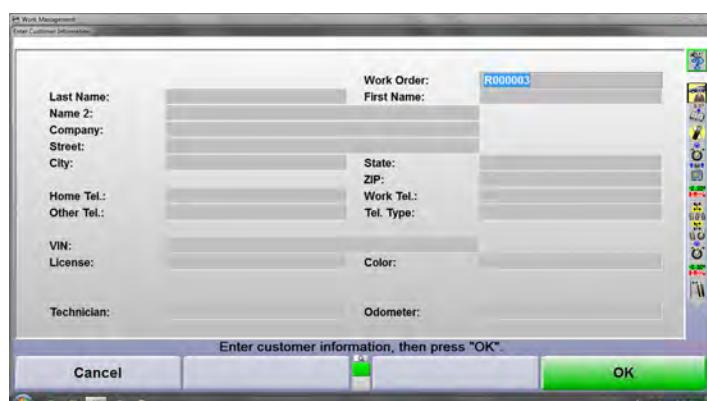
Within WinAlign®, the technician will identify the customer either through "Work Management" or on the "Edit Customer ID" screen. This will add the customer information to the data being saved on the web server allowing for personalization of the results. The results can also be sent to the database without this information.

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

Work Management Screen



Customer Identification Screen



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

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

NOTE: The results can be sent at any point of the alignment procedure by selecting the  icon at the bottom of the alignment toolbar.

2.4.3. Sending Alignment Results

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

2.4.4. Logging On to HunterNet® Online Service



NOTICE

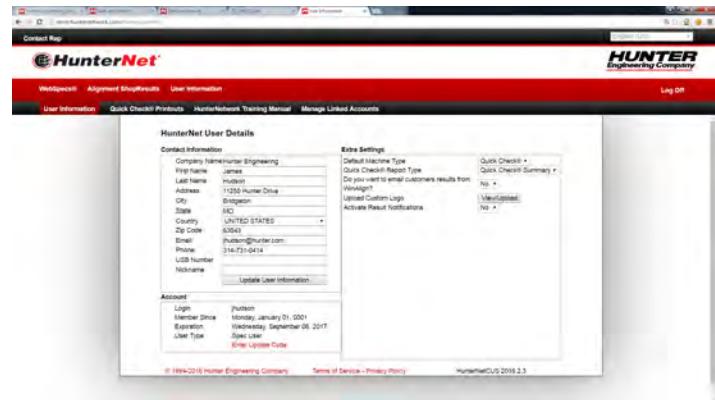
The following is an overview, for a detailed guide to HunterNet®, refer to form [6488-T](#).

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

Initial Setup/User Preferences

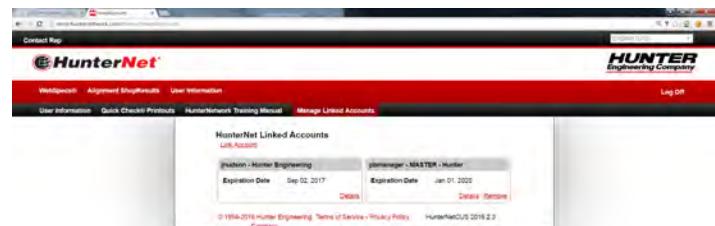
For existing users, enter your user name and password. If logging on as a new user press the new user option and enter the six character update code that was received from the specification update or counter license.

The Extra Settings pane provides additional customizing options.



2.4.5. Linked Accounts

This section is used to allow a shop manager to see the results from multiple machines under the current user name logged in. Linked Accounts work for all sections of Shop Results as far as listing events and showing reports. Login and contact info can be viewed using the "Details" button.

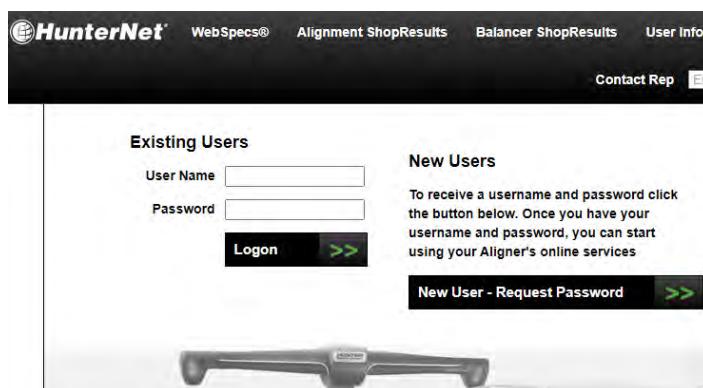


2.5. WebSpecs Online Specification Database

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

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

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



In the Contact Information pane, enter any contact information on the left pane.

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

WebSpecs® can be accessed from any PC with an Internet connection and Internet Explorer 5.5 and above. Use www.HunterNet@work.com to logon to WebSpecs®. The website will function the same as it does from the aligner console. When viewing online from a standard PC the screen will be similar, but without the WinAlign® frame and functionality.

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

2.5.1. WebSpecs Hardware and Software Requirements

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

Internet Explorer 5.5 Service Pack 2 or above is required.

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

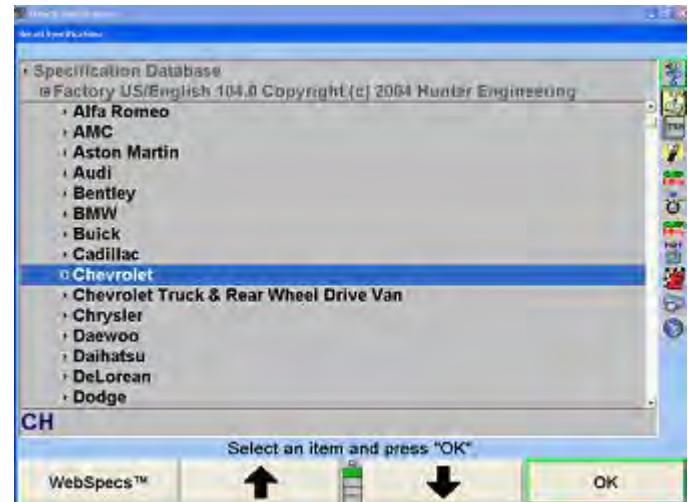
2.5.2. WebSpecs User Authorization

The user will be required to obtain a one-year HunterNet® Access License. The License provides a user identification and password. This user name will only operate on one aligner and one additional device with internet access. At the end of the license expiration date, the WebSpecs® feature will no longer be available, and the password will expire. Contact your local Hunter service representative for upgrade and subscription rates.

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

2.5.3. Accessing WebSpecs®.NET on the Aligner Console

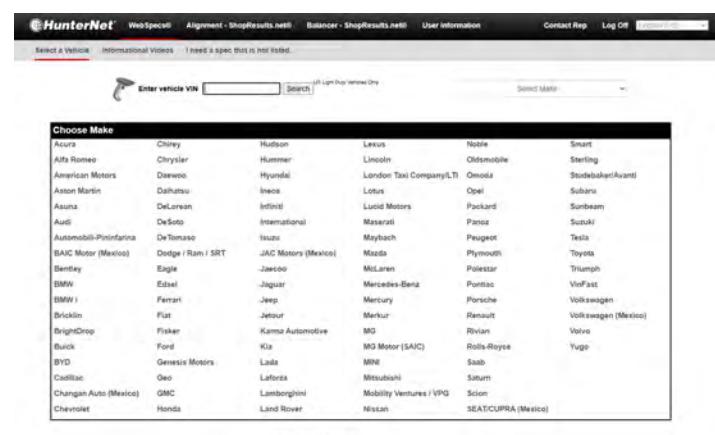
Start WinAlign® and select “Begin Alignment”. In the “Recall Specifications” screen, determine whether the vehicle is already in the specification database. If the vehicle is not listed, select the “WebSpecs®” softkey.



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

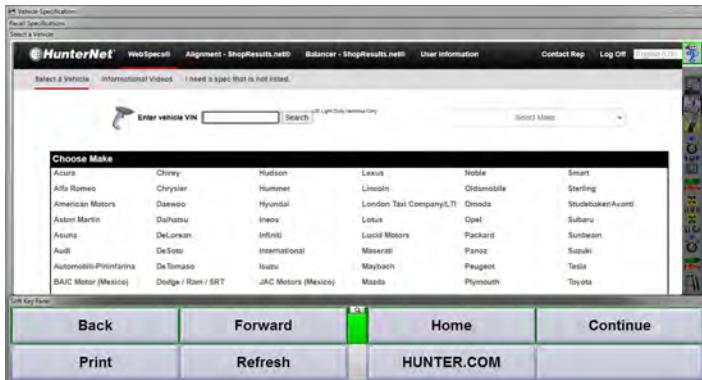
Upon initial login, some extra information is required to set up the account. From the User Information tab, enter any contact information on the left pane.

The Extra Settings pane provides additional customizing options refer to “[Initial Setup/User Preferences \[52\]](#)” on page 66 for more information.



[WebSpecs® Home Page](#)

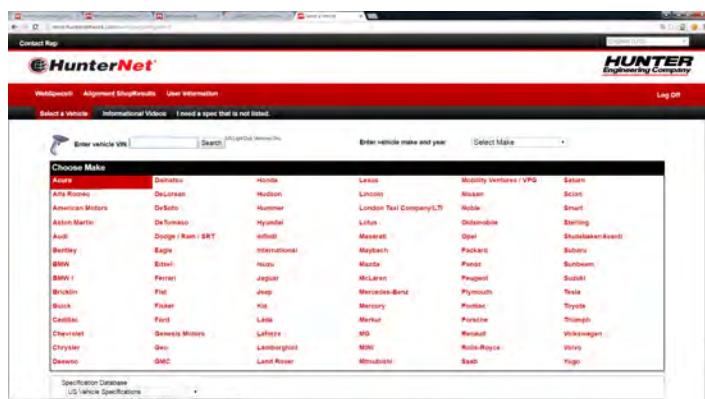
Navigate the “WebSpecs®” screens in WinAlign® by using the softkeys displayed below. “Back” returns to the previous screen, “Forward” goes to the next screen in sequence and “Home” returns to the “WebSpecs® Vehicle Manufacturer” screen. “OK” returns to the WinAlign® program.



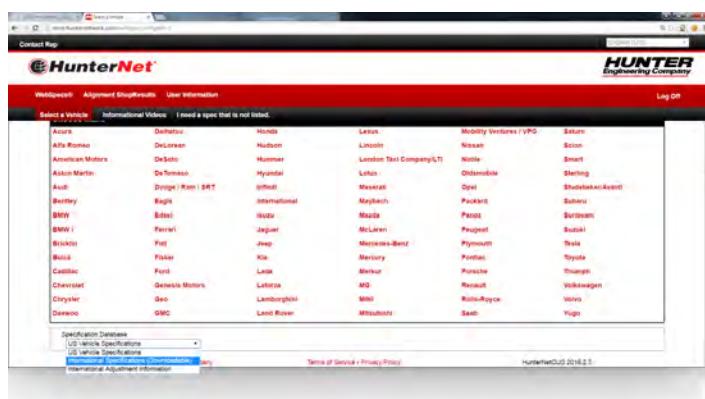
The "Print" and "Refresh" softkeys in the second level of softkeys will print or refresh the screen displayed. The "Hunter.com" or "HunterUser.com" softkey will take the user directly to the Hunter Engineering website.

2.5.4. Vehicle Selection

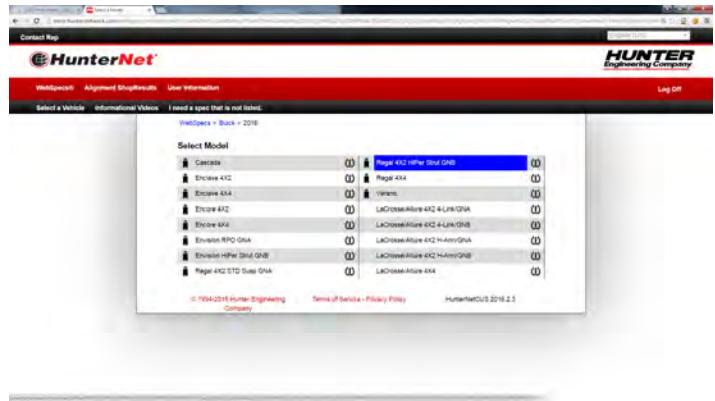
The home screen will display all available vehicle manufacturers in the specification database.



The spec database can be changed from domestic or international versions at the bottom of the screen.



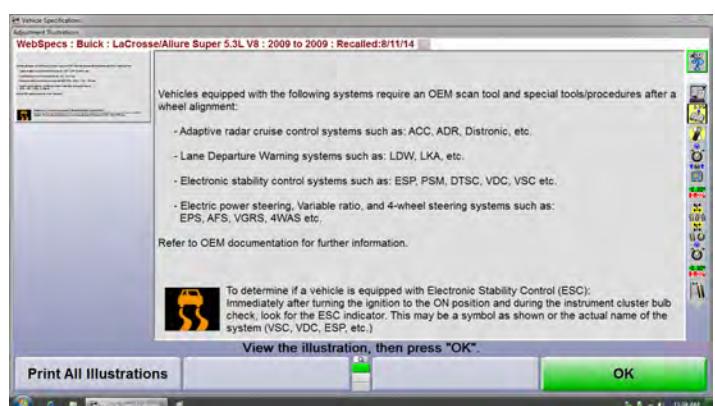
Select the manufacturer, then the year, then the model



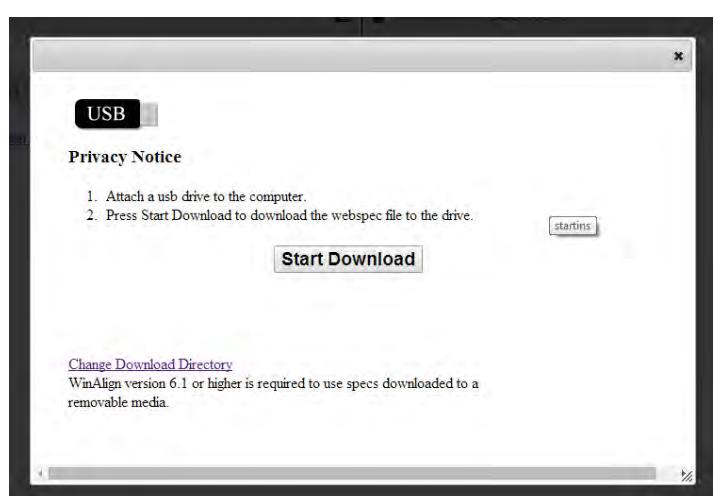
2.5.5. Downloading Specifications

The flash drive icon indicates models with specifications, illustrations and information that is available for download.

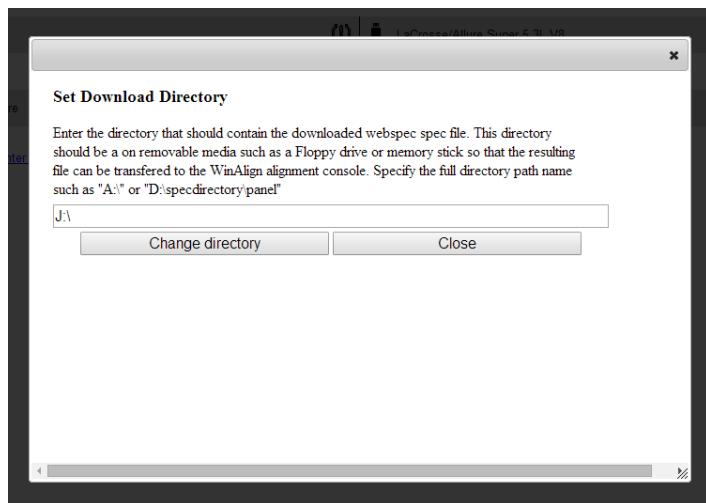
Clicking the flash drive icon from the aligner window will open a preview of the information that is available. Click "Download Information", the specifications, illustrations and videos are then automatically integrated into the WinAlign® procedure. Select "OK" to continue with the alignment or Quick Check®.



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



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



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

When Download is Complete



2.5.6. Uploading Specifications From a File

To upload spec files to the aligner PC, plug the flash drive into an open USB port. At the "Recall Vehicle Specs" screen, move to the third level of softkeys and select "Get WebSpecs® from Disk File".



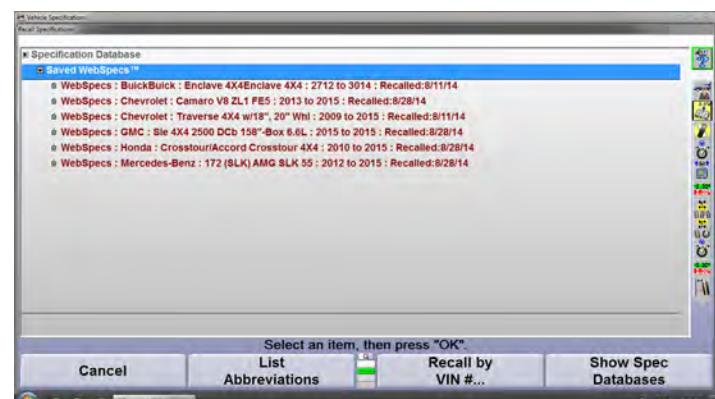
If the files do not appear in this window, move down to the lowest level of softkeys and select "Set WebSpecs® Search Location". Enter the drive or directory name of saved files, such as "D:\".



The files should now appear after selecting "Get WebSpecs® from Disk File. Double clicking the vehicle selects it and WinAlign® will proceed with the alignment or Quick Check® process.

2.5.7. Recalling Saved WebSpecs

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



2.5.8. Deleting Saved WebSpecs

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

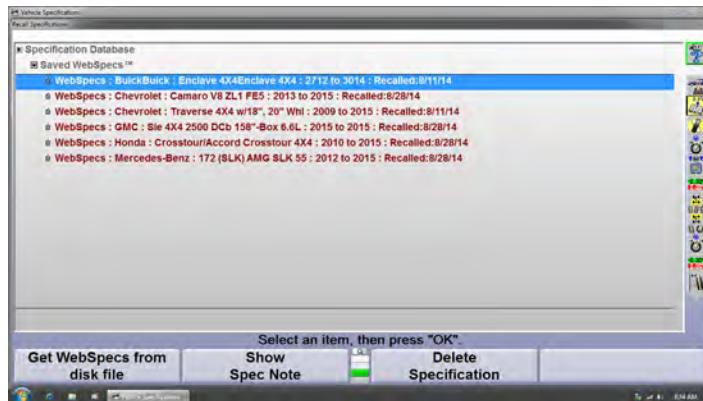
When you have exceeded the 50 maximum downloads the following message will automatically appear.

The maximum number of WebSpecs® has been stored on your computer. The WebSpec you just recalled will be available during the current alignment but will not be available for later recall from your hard drive. To make

more space available for WebSpecs®, press “Delete the ten oldest WebSpecs®”.

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

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



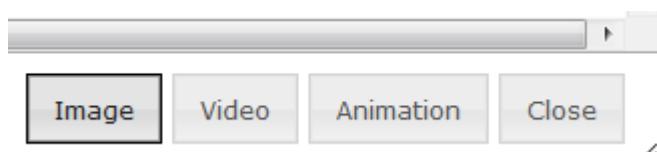
Select “Delete Specification” from the softkeys to remove.

2.5.9. Viewing Adjustment Illustrations in WebSpecs

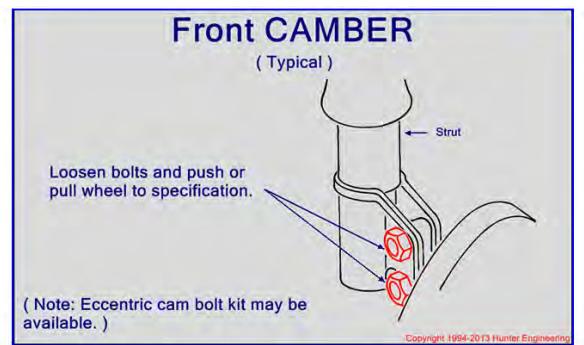
Photos and diagrams of adjustment options are available in WebSpecs® vehicle summary screen.



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

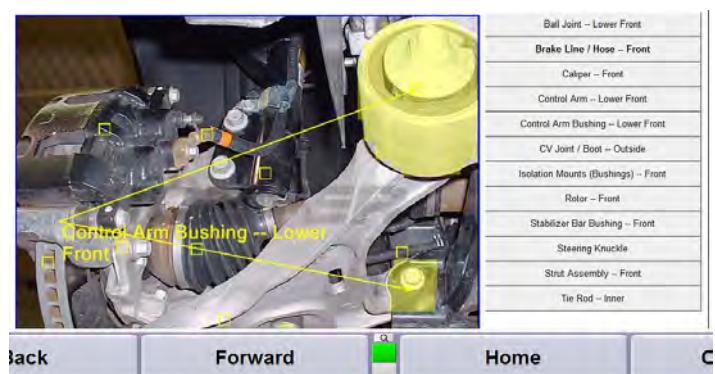


To view diagrams instead of pictures, click “Adjustment Illustrations” in the Tool Box, then select “Diagrams Only”. Available diagrams are listed at the bottom of the screen



2.5.10. Parts Inspection

WebSpecs® has incorporated the display of inspection illustrations. Click “Adjustment Illustrations” in the Tool Box, then select “Inspection Parts”.



The screen offers the same zoom features as stated with the adjustment illustrations and adds the option of different text color choices for optimum visibility. Each part is marked with a square, and is labeled on the right side of the screen. The part can be highlighted by clicking on the part on the screen, or by selecting the label on the right side.

To view a different set of inspection parts, select a new image on the bottom of the screen.

The Parts Inspection illustrations can also be accessed through the “Point and Click Inspection” thumbnails at the bottom of the main screen.



© 1994-2014 Hunter Engineering Company

[Privacy Notice](#)

[Back](#)

[Forward](#)



2.5.11. Tools & Kits

Click the icon to open up a list of tools and kits required for the selected adjustment. Multiple adjustments and tool manufacturers can be selected at the same time by checking and unchecking the boxes at the top of the page.

[Return to Vehicle Summary](#)

Alignment Angle		Tools/Kits Available		
<input type="checkbox"/> Front Camber	<input checked="" type="checkbox"/> Front Caster	<input type="checkbox"/> Front Toe	<input checked="" type="checkbox"/> General Motors	<input checked="" type="checkbox"/> Hand Tools
<input type="checkbox"/> Rear Camber	<input type="checkbox"/> Rear Caster	<input type="checkbox"/> Rear Toe	<input checked="" type="checkbox"/> Raybestos (Spicer)	<input checked="" type="checkbox"/> McQuay-Norris
Unique Items				

Front Caster

15mm Socket

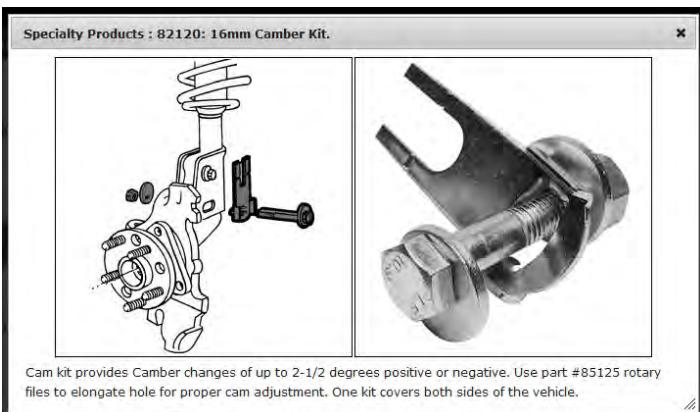
15mm Wrench

Die Grinder

Ratcheting

[Back](#) [Forward](#) [Home](#) [C](#)

Clicking on an adjustment kit or tool thumbnail will open a window listing part numbers and details about the kit.



2.5.12. Printing WebSpecs® Adjustment Illustrations

Select "Print" to print the illustration currently displayed on the screen and a screen will appear depicting the print image.

Rear TOE

Rotate eccentric to adjust rear TOE.

[Front Camber](#) [Front Caster](#) [Front Toe](#) [Front Caster](#) [Front Toe](#)

[Refresh](#) [HunterUser.COM](#)

2.5.13. Using WebSpecs on a Remote PC

Access the Internet from any PC with an ISP and Internet Explorer 5.5 Service Pack 2 or greater. Navigate to www.HunterNet@work.com.

Enter the user name and password and select "Logon" All functions of the website are identical to the functions when used within the WinAlign® software program except that specs cannot be viewed.

2.5.14. Requesting a Specification .

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

Request a specification

The Request-a-spec service is available during regular business hours (9:15am-5:00pm Central Time) Monday thru Friday. This service is primarily for North American customers.

Contact Information		Vehicle Information	
Company Name	<input type="text"/>	Vehicle Make	<input type="text"/>
First Name	<input type="text"/>	Model	<input type="text"/>
Last Name	<input type="text"/>	Year	<input type="text"/>
Address	<input type="text"/>	VIN	<input type="text"/>
City	<input type="text"/>	Notes	<input type="text"/>
State, Zip Code	<input type="text"/>	<input type="text"/>	
Email	<input type="text"/>	<input type="text"/>	
Telephone	<input type="text"/>	<input type="text"/>	

[Send Request](#)

[Privacy Notice](#)

2.5.15. TPMSpecs on WebSpecs

Just as updated vehicle adjustment specifications are available on WebSpecs®, so are TPMS specifications. Select the year make and model of the vehicle as normal using WebSpecs®. Select the TPMS icon at the top right of the vehicle summary screen.

TPMS Standard



Detailed TPMS information about the selected vehicle will be shown.

[Return to Vehicle Summary](#)

Buick : Lucerne : 2007 - 2011 TPMS Standard

2.5.16. TPMSpecs within WinAlign

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

Buick : Century : 2001-03

Click the TPMS icon and the following screen will appear.

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

2.6. ShopResults

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

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

From the "Results" column, users can view Quick Check® and alignment results and email those results to the customer or any valid email address.

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

Quick Check® Trends Quick Check® Management Report Quick Check® Details

Date: 8/23/2016 1:28:35 PM
Email: acura-cl-200103-exceptype.s
Vehicle: acura-cl-200103-exceptype.s
Reply To:
Subject:
Email Message

Customer

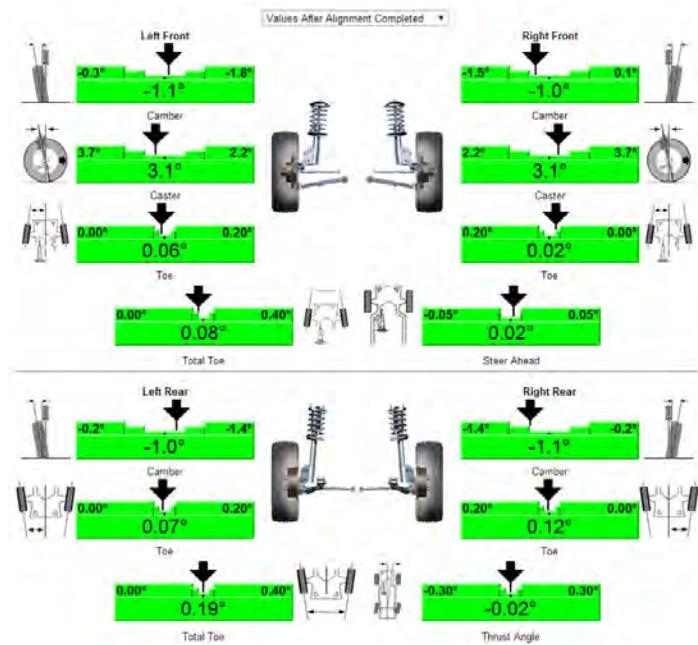
VIN

Technician:
License No. Vehicle No.: 13 Vehicle: Acura: CL Date: 8/23/2016

Front axle

	Before	Specified Range	After
Left Camber	0.5°	-1.0° to 1.0°	0.5°
Right Camber	0.5°	-1.0° to 1.0°	0.5°
Left Caster	2.8°	1.8° to 3.8°	2.8°
Right Caster	2.8°	1.8° to 3.8°	2.8°
Left Toe	0.00°	-0.08° to 0.08°	0.00°
Right Toe	0.00°	-0.08° to 0.08°	0.00°
Total Toe	0.00°	-0.16° to 0.16°	0.00°

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



Customer Results

Quick View Alignment Trends Quick Check® Trends Quick Check® Management Report Quick Check® Details Quick Check® Daily

VIN

Select Result

Date	Vehicle Name	VIN	ShopResults.net#
1/13/2015 8:30:14 AM	Nobles Seling	2765830575010544	Quick Check®
1/13/2015 8:32:25 AM	Nobles Frontend	1F29002CNH010086	Quick Check®
1/13/2015 7:58:21 AM	Nobles Caster	44405AF1C9322952	Quick Check®
1/13/2015 7:41:24 AM	Nobles Imbalance/Steer	01604M3030000001	Quick Check®
1/13/2015 7:32:39 AM	Nobles Frontend	1F25AAEC3H010672	Quick Check®
1/13/2015 7:32:39 AM	Nobles Frontend	1F25AAEC3H010672	Quick Check®

Shop Details

Filters

© 1994-2015 Hunter Engineering Company [Terms of Service](#) [Subscription Terms of Service](#) [Privacy Policy](#) HunterNet App 2.47.0

2.6.1. Emailing Results

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

Email: Enter the email address of the vehicle owner (or any other valid email address)

Reply To: Enter your shop's email address

CC: Enter an additional email address (optional)

Subject:

Message: Your alignment check or adjustment is complete. Click on the link below to view the results.

The link to the alignment results is inserted here in the email message.

Hunter Engineering
11330 Research Drive
Madison
Wisconsin
53713

[Send Email](#)

The recipients email will include a link to the results. Alignment results will be formatted the same way they are viewed on the “Bar Graphs” screen “Figure 140” on page 74. Quick Check® results will be formatted based on printout selected under the HunterNet® “User Info” tab.

2.6.2. Alignment/Quick Check®

2.6.3. Trends and Reports

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

Contact Rep

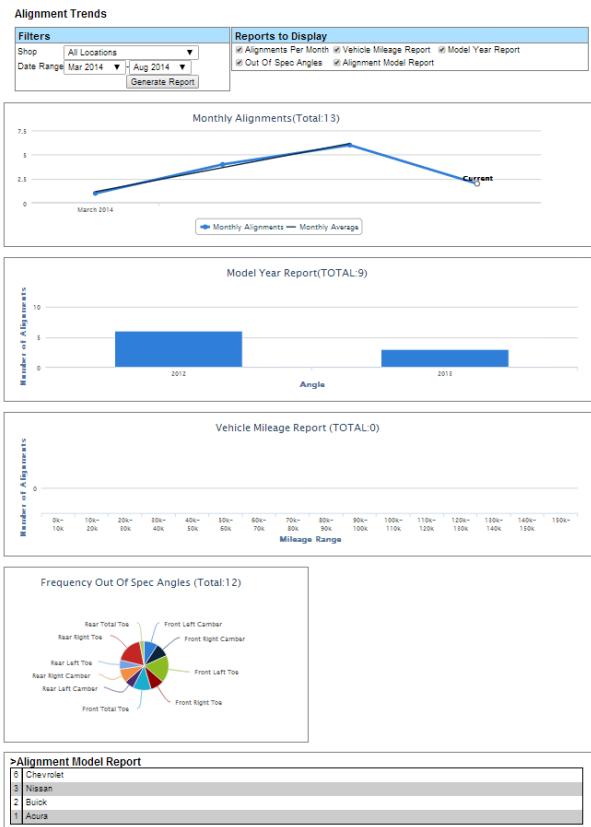
HunterNet®

WebSpecs® Alignment ShopResults® User Information

Customer Results Alignment Trends Quick Check® Trends Quick Check® Management Report Quick Check® Details Quick Check® Daily

Alignment Trends

The alignment trends tab creates visual metrics to illustrate alignment performance. Metrics such as alignments per month, model year, and mileage can all be tracked. The time frame and reports displayed can be changed using the tools at the top of the page “Figure 144” on page 75



Quick Check® Trends

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

Management Report

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

Hunter Quick Check™ Management Report

HUNTER
Engineering Company

Hunter Quick Check™ Management Report

Tested (Total)	Opportunities				
	Wheel Alignm.	Brake	Tire	Battery	Code
0	Week-to-date	8/4/2014 - 8/7/2014	0	0	0 0
ROs > Conversion Rate					
0	Month-to-date	7/28/2014 - 8/7/2014	0	0	0 0
ROs > Conversion Rate					
13	Year-to-date	12/30/2013 - 8/7/2014	.5	0	0 1 1
ROs > Conversion Rate					
13	Lifetime	3/17/2014 - 8/7/2014	5	0	0 1 1
ROs > Conversion Rate					
Shop Details					
All Locations					

Quick Check® Details

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

Hunter Quick Check™ Details Report

HUNTER
Engineering Company

Hunter Quick Check™ Details Report

Shop Details	Filters		
	All Locations	Start Date	End Date
Vehicle	75%	Alignment	
Vehicles Inspected	12	Total Checks	12 42%
Opportunities	9	Opportunities	5 42%
Failed 1 Test	8	Failed Front Axle	5 42%
Failed 2 Tests	1	Failed Front Camber	3 25%
Failed 3 Tests	0	Failed Front Total Toe	2 17%
Failed 4 Tests	0	Failed Rear Axle	2 17%
VIN Captured	10	Failed Rear Camber	2 17%
Mileage Captured	5	Failed Rear Total Toe	0 0%
Brake			
Total Checks	0	Total Checks	3 33%
Opportunities	0	Opportunities	1 33%
Failed Front-to-Rear Balance	0	Needs Investigation	1 33%
Failed Front Left-to-Right Balance	0	Yellow Battery	1 33%
Failed Rear Left-to-Right Balance	0	Bad Cell	0 0%
Battery			
Total Checks	0	Total Checks	3 33%
Opportunities	0	Opportunities	1 33%
Needs Investigation	1	Yellow Battery	1 33%
Bad Cell	0	Good	2 67%
Diagnostic			
Total Checks	3	Total Checks	12
Opportunities	0 0%	Opportunities	0
Trouble Codes Present	0 0%	Failed	0 0%
Vehicles Failed:		Tread Warning	0 0%
0% 0 Check Engine	Evaporative System 3 100%	Tire (Units) Tread Depth:	
0% 0 Misfire	2nd Air System 0 0%	33% 4 11/32"-32/32"	5/32" 0 0%
0% 0 Fuel System	A/C Refrigerant 0 0%	0% 0 10/32"	4/32" 0 0%
0% 0 Comprehensive	O2 Sensor 3 100%	67% 6 9/32"	3/32" 0 0%
0% 0 Cmpnt.	O2 Sensor Heater 3 100%	0% 0 8/32"	2/32" 0 0%
100% 3 Catalyst	EGR/VVT System 3 100%	0% 0 7/32"	1/32" 0 0%
0% 0 Heated Catalyst		0% 0 6/32"	0/32" 0 0%

Quick Tread Daily

The Quick Tread Daily tab contains results from Quick Tread measurements performed. The results can be sorted by the particular account(s) linked and by date.

2.6.4. Selecting Display Units

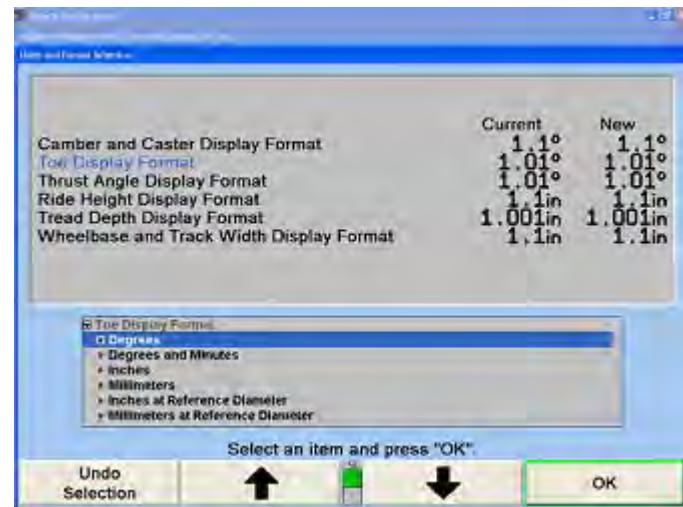
Do not underestimate the importance of selecting the display units. Although the ability to change display units can be beneficial, the factory specifications are displayed in the format designated by the manufacturer.

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



NOTICE

The "Alignment Measurement Units and Formats Setup" pop-up screen may also be accessed by selecting Alignment Measurement Units and Formats from Aligner Setup. Refer to "[Aligner Set-Up \[164\]](#)".



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

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

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

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

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

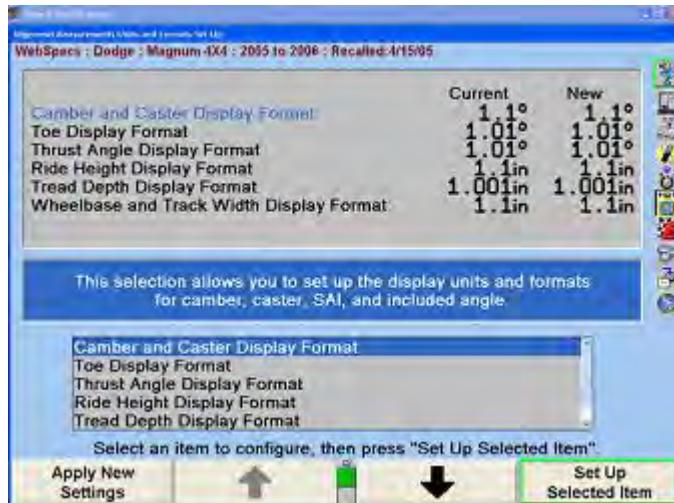
Press "Exit" to return to the "Vehicle Specifications" screen.

2.6.5. Printing Specifications

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

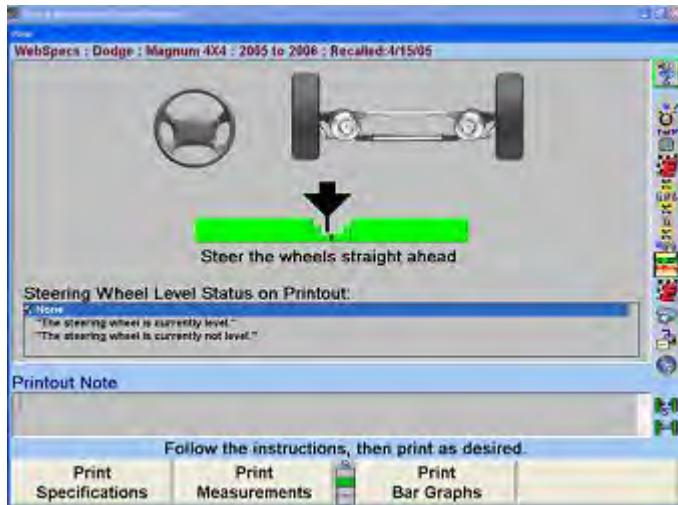
To print the vehicle specifications, press "Print" on the Vehicle Specifications primary screen or the "Vehicle Measurements and Adjustments" primary screen. The "Print" pop-up screen will appear.

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



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

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



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

2.7. Alignment Log Analyzer

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



NOTICE

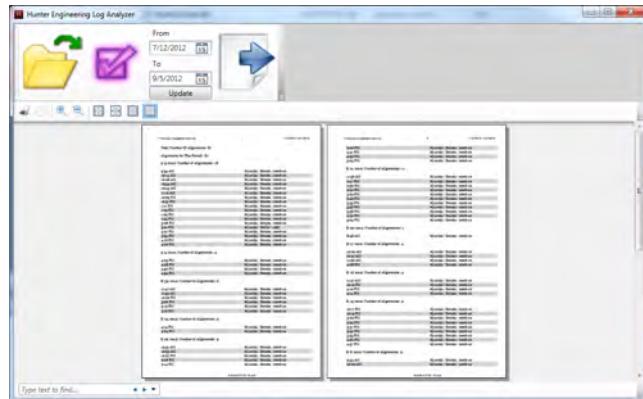
At least one alignment must be performed for the log analyzer to become available.

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



When selected, a separate program will launch the analyzer.

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



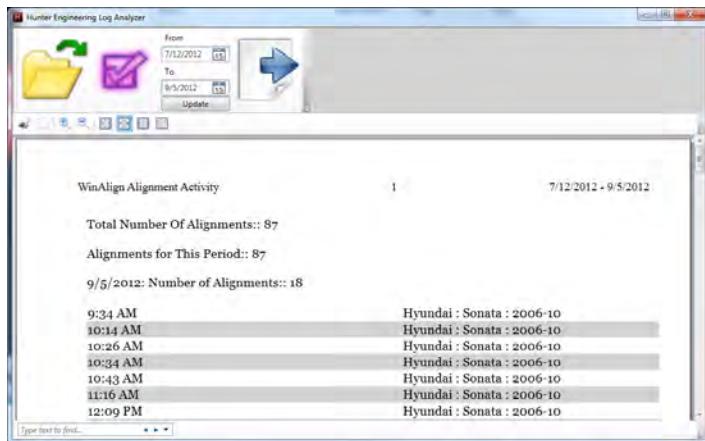
The small buttons below the large buttons have the following uses:

- Prints the current report
- Copies the selected text
- Zoom In
- Zoom Out
- Show single page at 100%
- Show single page to fill the window
- Show an entire single page in the window
- Show two entire pages in the window



Each report is organized in the following way:

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



2.8. Vehicle Measurements and Adjustments

2.8.1. Vehicle Plan View Status Indicator

The purpose of the vehicle plan view status indicator is to illustrate: The geometry of the vehicle under alignment.



NOTICE

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

Where and how the sensors should be mounted. Which axle of the vehicle is currently displayed. The current status of the sensors, transducers, and sensor communications.

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

During VirtualView® and ExpressAlign® screens. The indicator shows:

The vehicle geometry.

The currently required sensor mounting locations and orientations.

Which axle the measurements and adjustments currently apply.

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

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

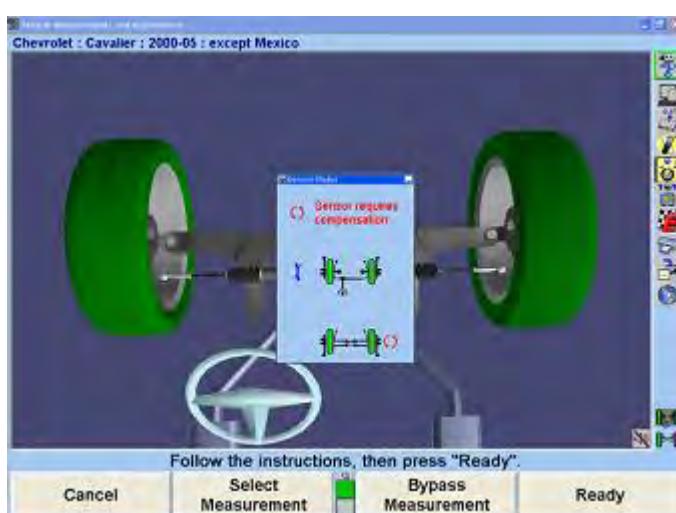
To change the displayed axle measurements, click on a wheel of the indicator with a pointing device, or press the softkey for "Show Next Axle".

2.8.2. Target Blockage

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



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



The indicator appears on the display when:

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



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

2.8.3. Sensor Troubleshooting

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

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

Note that different sensors may experience different problems at the same time. For example, the left front sensor might require compensation while the right front sensor has a problem with a camber transducer. An icon meaning “the sensor requires compensation for runout” would appear next to the left front sensor, while an icon meaning “the sensor has a transducer problem” would appear next to the right front sensor.

The compensation problem has a higher priority than a transducer problem, and so the icon and text above the plan view would show the same icon as the left front sensor along with the text “Sensor requires compensation”.

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

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

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

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

	Sensor is not connected.
--	--------------------------

2.8.4. Spoiler Mode (Applies to DSP708 Sensors)

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

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



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

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

2.8.5. Showing Measurements

For "Geometric Centerline" the measurements for alignment, front camber, toe, and total toe will be shown. For "Thrust Line" or "Total 4-Wheel" alignment, camber, toe, and total toe for the front will be displayed as well as rear camber, toe, total toe, and thrust angle.



NOTICE

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



NOTICE

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

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

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

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



NOTICE

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

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

2.8.6. Bar Graph Adjustments

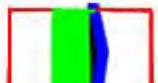
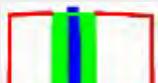
Bar graphs are used to show alignment angle information for each wheel. These bar graphs indicate the difference between the actual measurements of the vehicle and the recalled specifications. The adjustment tolerances determine the size of the center areas of the bar graph.

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

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

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

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

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

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

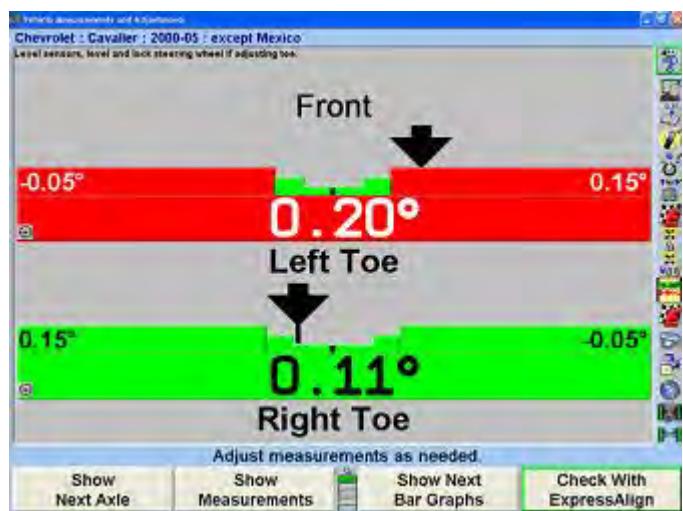
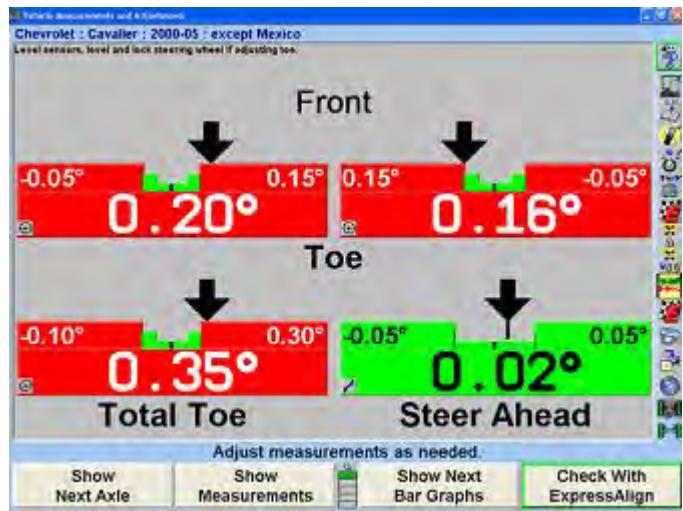
Either "no specification", a "zero tolerance", or "no tolerance" is entered for that angle.

OR

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

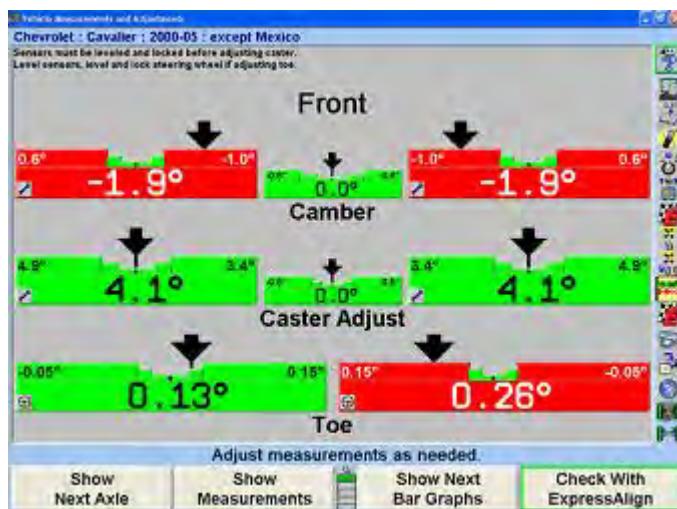
2.8.7. Bar Graph Groups

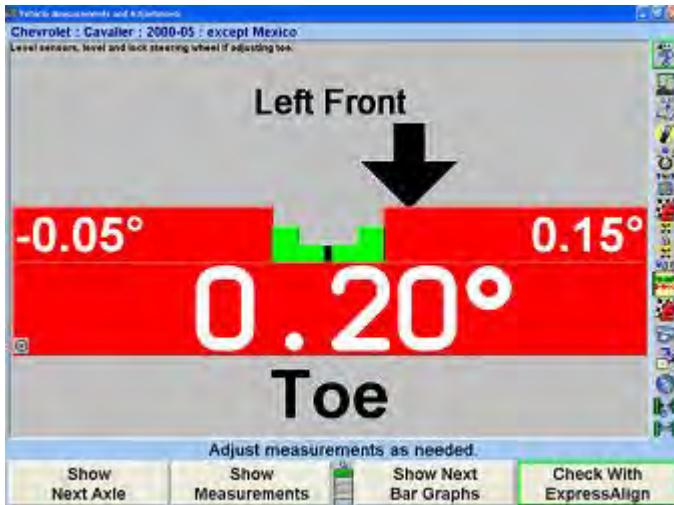
The bar graphs can be viewed in various groups. Three examples are shown below.



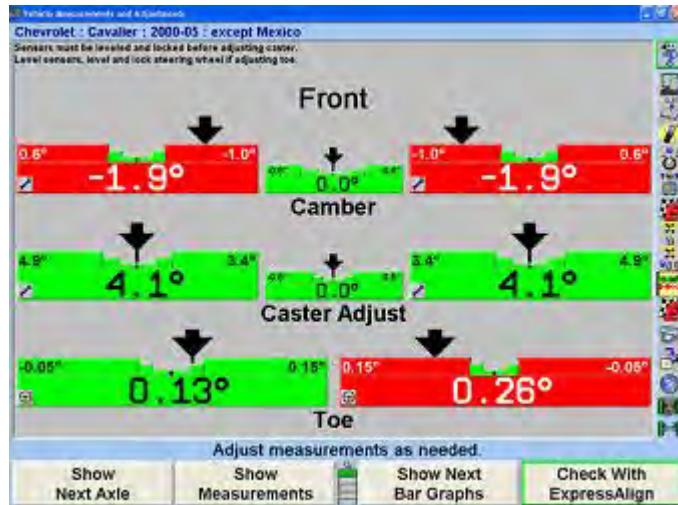
To view an alternative group or single bar graph, press "Show Next Bar Graphs". Repeat to view the next bar graph group. When all enabled bar graphs have been viewed, the first enabled bar group will appear when "Show Next Bar Graphs" is pressed.

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





To return to the previous bar graph display, click on the current bar graph. In VirtualView® select any bar graph with the mouse and it will also zoom in for a larger display.



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

2.8.8. Context Sensitive Menu

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

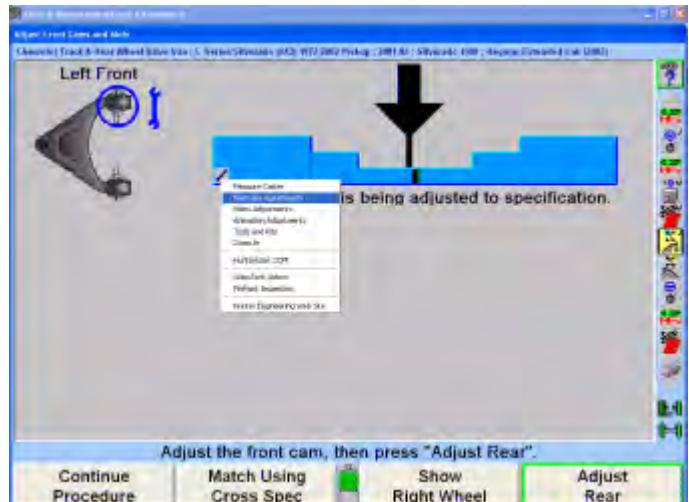
To view the menu, move the arrow cursor to the desired bar graph with a light pen or mouse, then press and hold. Pressing the TAB key will also cycle through each context sensitive menu.

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

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

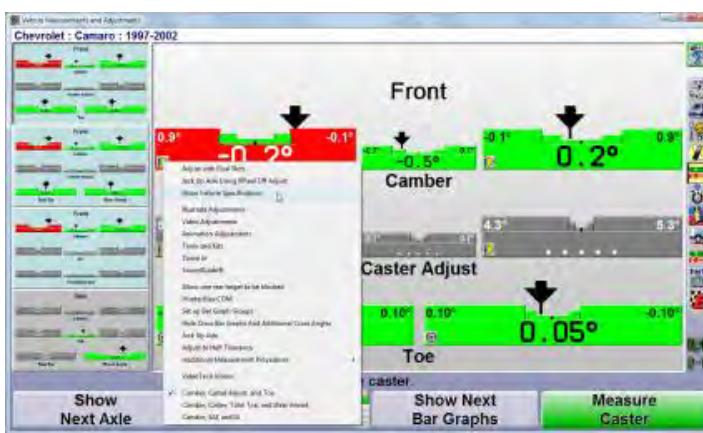


Like the "Vehicle Measurements and Adjustments" screen, cross camber and caster can now be displayed in the adjustment bar graph screen using the context sensitive menu.



2.8.9. Zero Adjustments

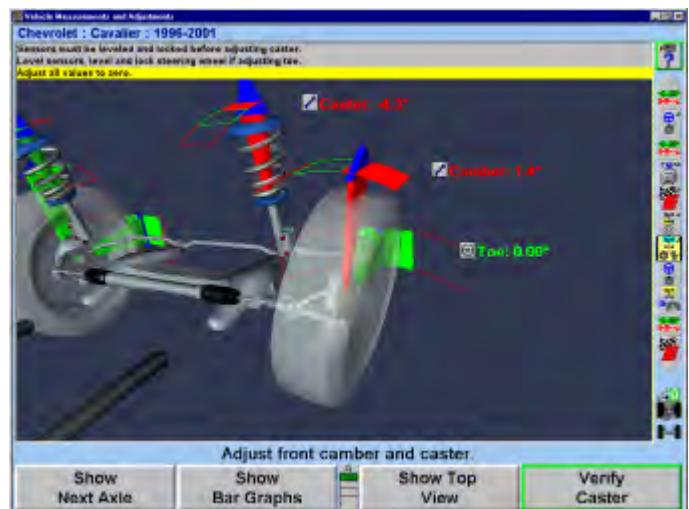
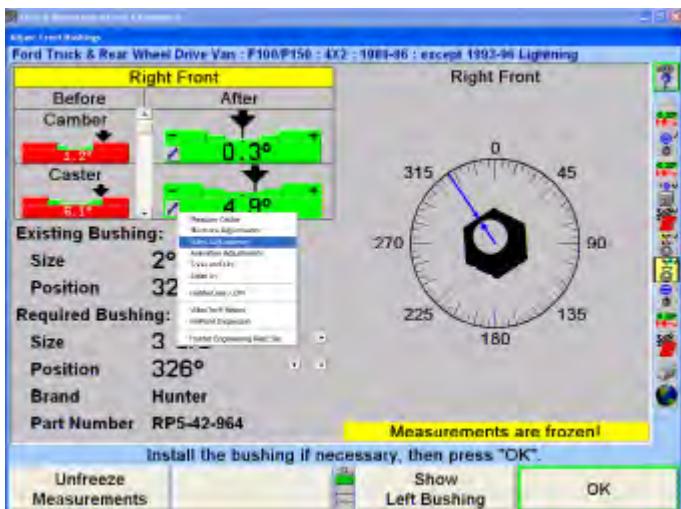
The “Zero Adjust” screen shows the amount and direction (\pm) the actual measurement is from the preferred specification. Adjusting an angle to zero on this display will cause the actual angle measurement to be exactly equal to the preferred specifications as established by the alignment specifications.



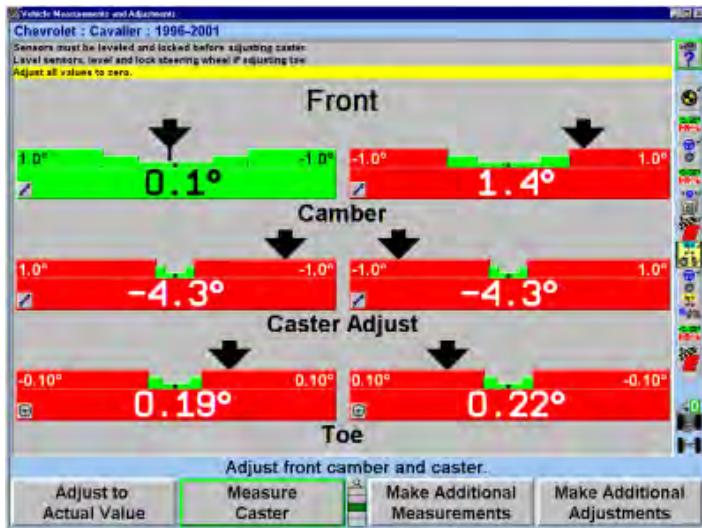
To select the desired item, continue moving the cursor until the desired item is highlighted. Click on the highlighted item and the selected pop-up screen will appear.

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

Automatic Bushing Calculator



CAMM, Control Arm Movement Motion



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

2.8.10. Showing and Selecting Front and Rear Axles

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

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

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

2.8.11. Adjusting with Axles Raised

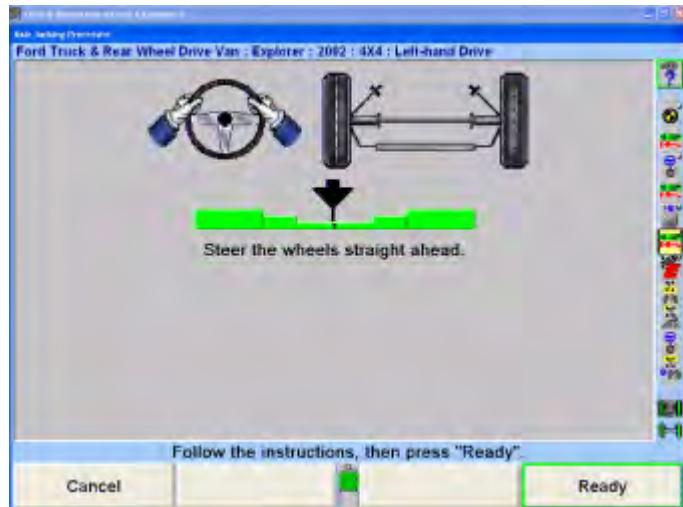
A vehicle may require that the wheels be raised to make an adjustment to rear or front camber and caster. When the wheels are raised, the sensors will move and the angles will change. If the instructions are followed, the software compensates for the movement of the sensors to allow accurate adjustment.



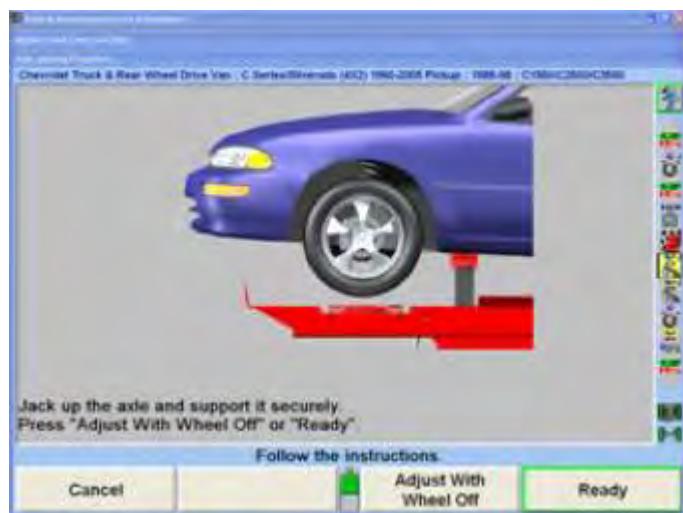
NOTICE

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

To adjust vehicle with axle raised: Press "Jack Up Selected Axle" on the "Vehicle Measurements and Adjustments" primary screen. If the wheels are not steered straight the following screen will appear. Steer straight ahead and the screen will automatically go to the "Axe Jacking Procedure" screen.



The "Axe Jacking Procedure" pop-up screen will appear.



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

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

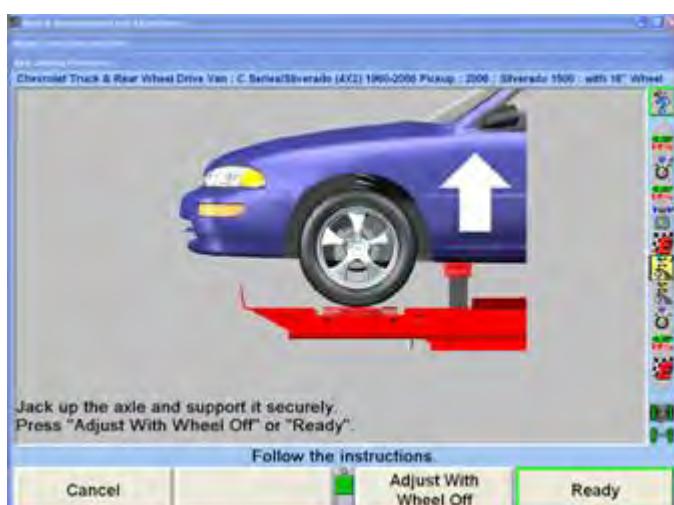


Lower the vehicle and then jounce. Press "Ready". The screen will return to the "Vehicle Measurements and Adjustments" primary screen.

2.8.12. Adjusting with Axles Raised Using Jack Detect Feature

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

Unlike standard axle jacking procedures, no softkeys need to be selected. An axle can be jacked up during the alignment procedure and WinAlign® will see that an axle is being raised and will proceed directly to the "Axe Jacking Procedure" screen. Press "Ready" to proceed with vehicle adjustments.



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

2.8.13. Wheel-Off Adjust Feature

Using the optional wheel-off adaptor adjustments may be made with wheel and tire assembly obstructions. The wheel-off adaptor kit, 20-1978-1, can be installed using the vehicles lug nuts or using the additional magnet assembly kit, 20-1979-1.

Accessing "Adjust with Wheel-Off" Procedure within WinAlign

With camera based sensors, the WinAlign® JackDetect™ feature senses when an individual axle is being raised.

Raise the axle and the "Axe Jacking Procedure" screen will appear.

Wheel-Off Adaptor Installation

Lock the brakes with the brake pedal depressor.



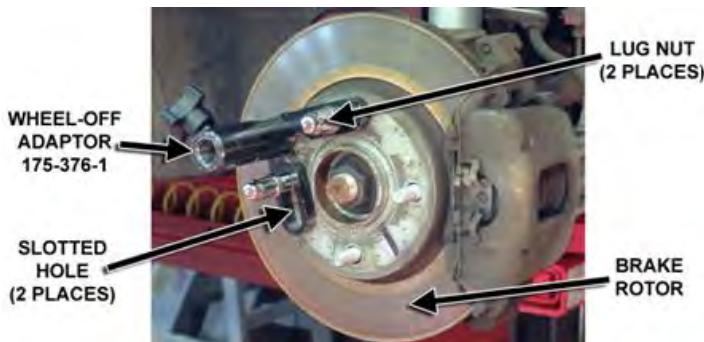
NOTICE

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

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

Standard Bolt-on Wheel-Off Adaptor Installation

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



Secure the Wheel-Off Adaptor with two lug nuts.



WARNING

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

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

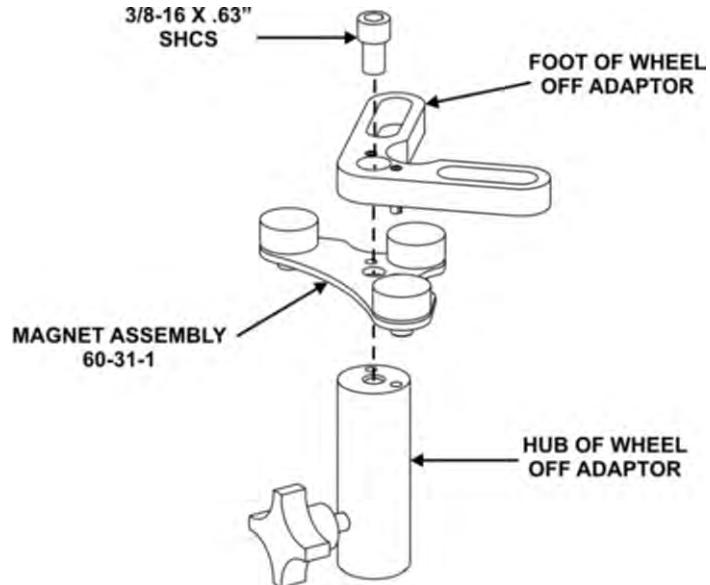
Wheel-Off Adaptor Installation Using the Optional Magnet Assembly Kit, 20-1979-1



WARNING

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

Remove the 3/8-16 X .63 socket head cap screw securing the foot to the hub. Remove the hub and set aside. Place the magnet assembly, 60-31-1, on the foot, aligning the two smaller holes to the split pins.



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

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

Repeat magnet installation to second Wheel-Off Adaptor.

Lock the brakes with the brake pedal depressor.



NOTICE

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

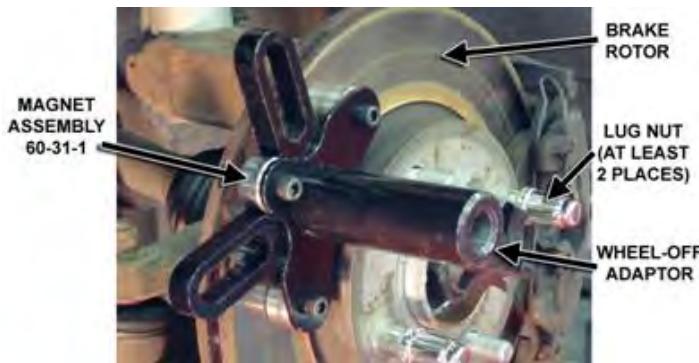
With the front or rear axle raised and supported, remove the target (or conventional sensor), wheel adaptor and wheel. Secure the brake rotor to the hub with at least two lug nuts.



WARNING

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

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



WARNING

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

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

Re-Install the Sensor or Target

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



Refer to installing the *SCA adaptors to TD Targets [27]*® for either standard or QuickComp® compensation.

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

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

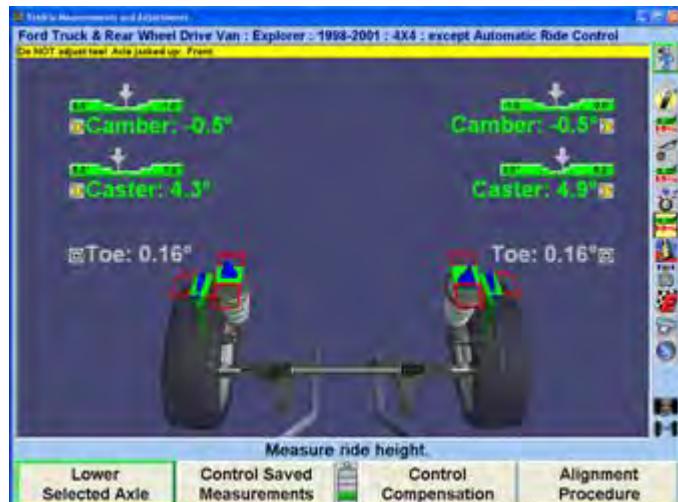
After the selected axle is raised, press "Ready". The program will compensate for the difference in sensor readings caused by raising the wheels and return to the Vehicle Measurements and Adjustments screen.

Make the necessary adjustments while observing the bar graphs.



WARNING

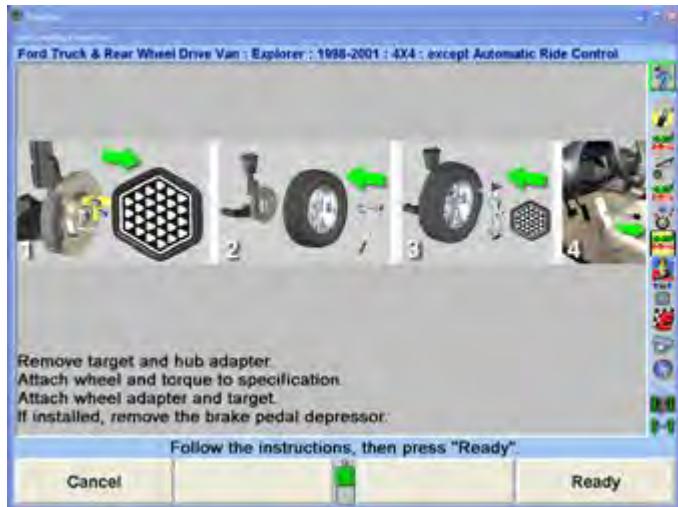
DO NOT adjust toe with the axle raised. Notice the Axle jacked up reminder at the top of the screen.



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

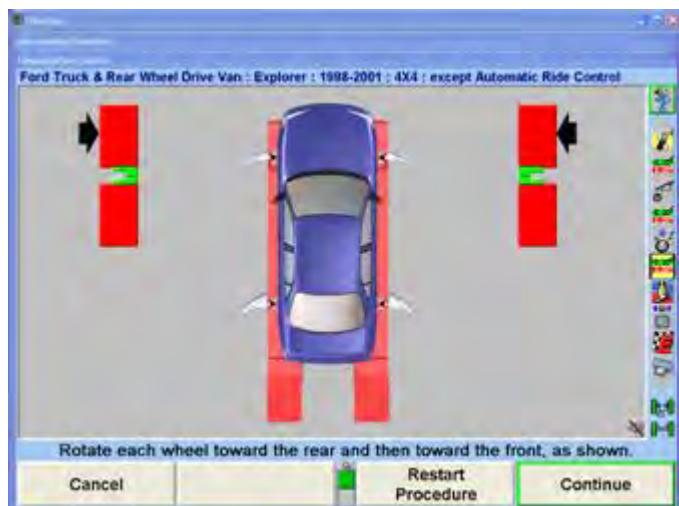
OR

Initiate the axle jacking procedure by pressing "Lower Selected Axle" on the Vehicle Measurements and Adjustments screen. The Axle Jacking Procedure screen will appear.



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

The Compensation Control screen will appear.



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



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

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



NOTICE

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

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

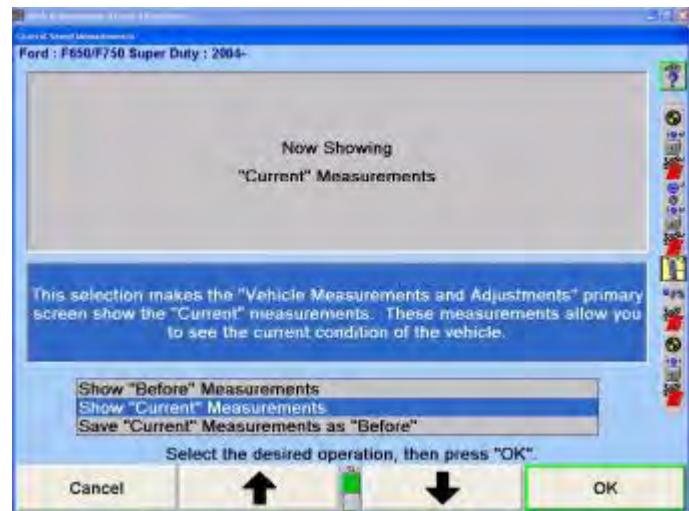
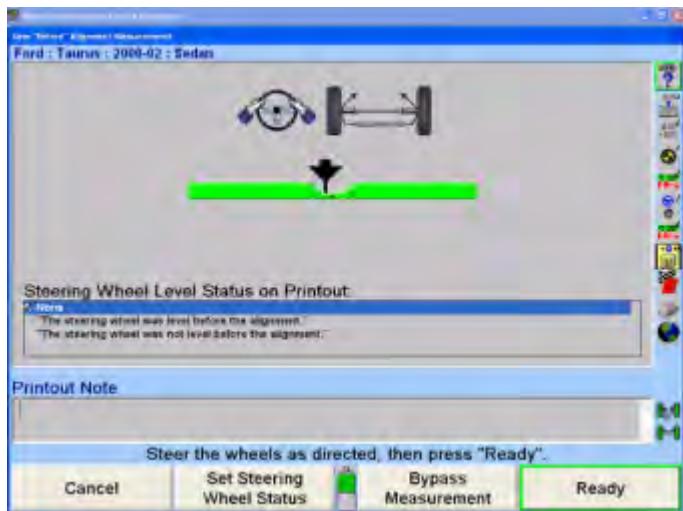
2.8.14. Saving Before Measurements

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

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

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

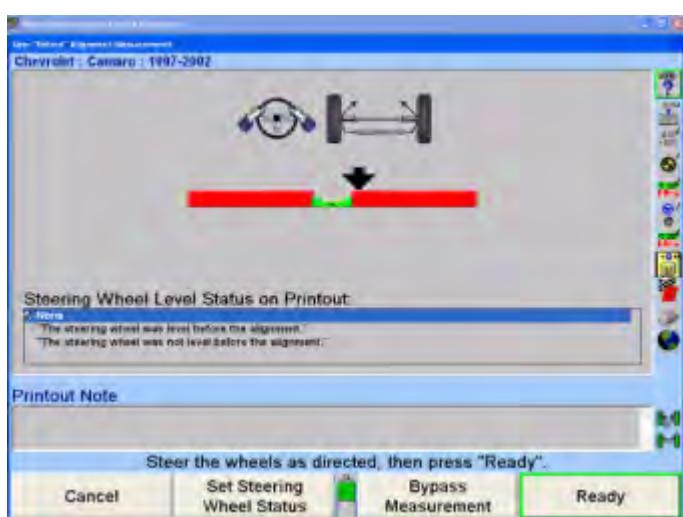
Steer the wheels straight ahead as indicated by the bar graph on the screen.



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

2.8.17. Showing Before Measurements

To see what the before adjustment measurements were:



WARNING

If the before measurements are not saved, the bar graphs will become gray.

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

Press ↑ or ↓ to highlight "Show Before Measurements".

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

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

2.8.18. Saving Current Measurements as Before Measurements

To replace the before measurements with the current measurements:

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

Press ↑ or ↓ to highlight "Save Current Measurements as Before". Press "OK". The "Save Before Alignment Measurements" pop-up screen will appear.

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

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

To save current measurements as before measurements, refer to ["Saving Current Measurements as Before Measurements. \[74\]"](#)

2.8.15. Control Saved Measurements

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

2.8.16. Showing Current Measurements

To display the current measurements of the vehicle:

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

Press ↑ or ↓ to highlight "Show Current Measurements".

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

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

2.8.19. ExpressAlign Alignment Adjustment System

ExpressAlign® is a feature that analyzes an alignment job and directs the technician through the alignment and adjustment procedures needed for a specific vehicle. ExpressAlign® reduces the alignment procedures to the minimum number of steps required to completely align the vehicle.

ExpressAlign® considers the following for each specified vehicle aligned:

The alignment adjustments that are necessary.

The alignment sequence and specifications for the adjustment(s).

The power tools that are applicable, (such as shims, WinToe®, CAMM®).

The applicable adjustment illustrations and videos.

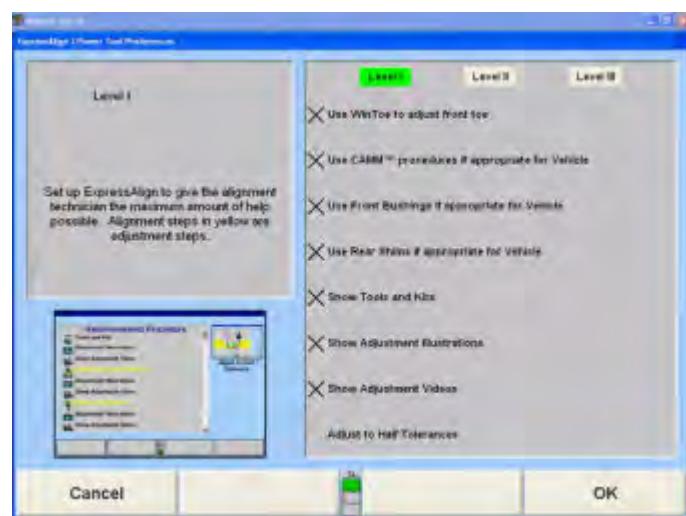
Then ExpressAlign® creates a custom alignment procedure that allows the technician to perform only the procedures needed for the selected vehicle.



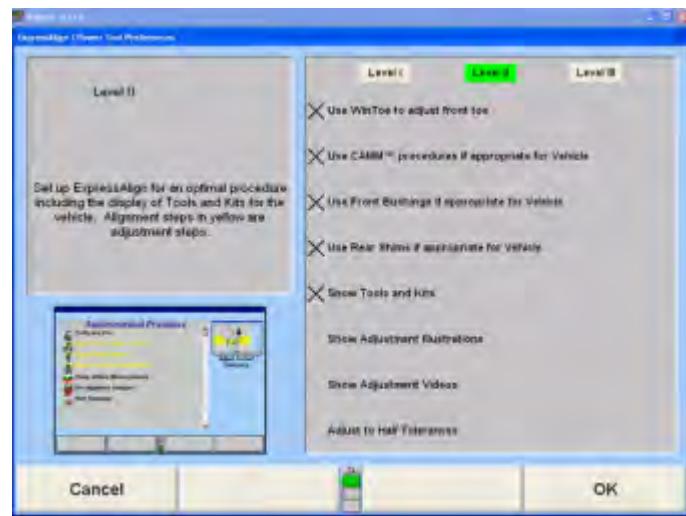
WARNING

ExpressAlign® may display bar graphs and prompt to adjust an angle that is out of specification that is non-adjustable according to the vehicle manufacturer. ExpressAlign® displays these bar graphs to indicate a possible problem within the suspension or steering components that needs to be diagnosed and repaired for proper alignment. This is why the manufacturer publishes a specification for that angle, even if it is not adjustable. There may also be an aftermarket kit available to make the necessary adjustment for this angle.

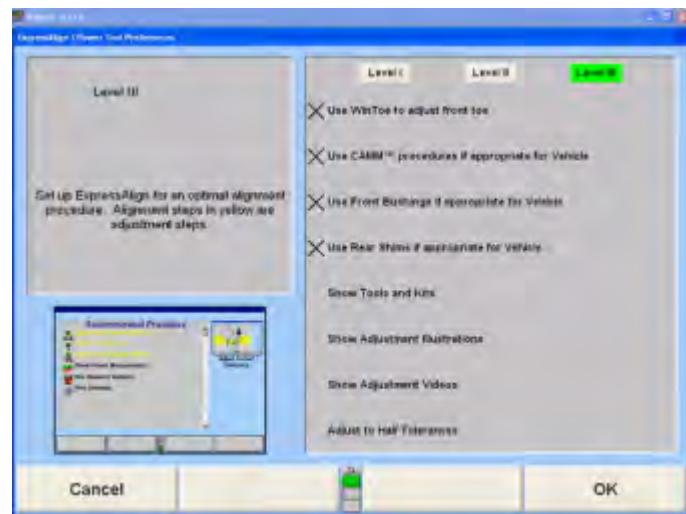
Three levels of ExpressAlign® can be selected from the "ExpressAlign® Setup," or a custom setup can be chosen. Level I is designed to provide the technician with the maximum amount of help and support to complete the alignment.



Level II is designed to present the optimal alignment procedure while still showing the user what tools and kits are necessary to complete the job.



Level III provides the optimal alignment procedure for the experienced technician.



Items may be selected individually for a custom ExpressAlign® setup. The items available include:

Use WinToe® if appropriate for Vehicle

Use CAMM procedure if appropriate for Vehicle

Use Front Bushings if appropriate for Vehicle

Use Rear Shims if appropriate for Vehicle

Show Tools and KitsShow Adjustment Illustrations

Show Adjustment Videos

Adjust to Half Tolerances

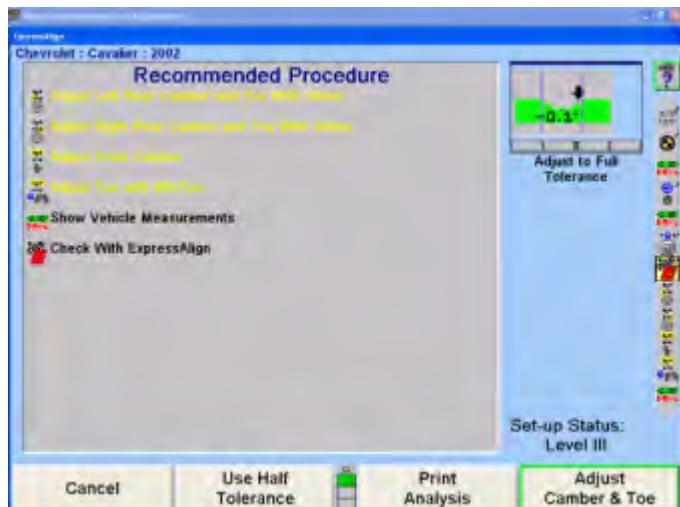
ExpressAlign® can be setup from "Aligner Setup", or while ExpressAlign® is running, it can be setup by selecting "Setup ExpressAlign®" softkey.

ExpressAlign® cannot be disabled while using

ExpressAlign® to perform an alignment job.

ExpressAlign® can only be disabled from "Aligner Setup".

After the vehicle is selected, inspected, sensors mounted and compensated, caster is measured, but before measurements are saved, the ExpressAlign® pop-up screen will be displayed as shown below.



NOTICE

The actual procedures displayed will vary depending on the vehicle and procedures that are enabled or disabled in "ExpressAlign® Setup."

On the ExpressAlign® screen, press the icon on the procedure bar that corresponds to the step to be

completed. During the procedure, continue to press the next icon on the procedure bar in order to progress through the procedure. As you go through the procedure, the current step will be highlighted on the procedure bar.

An icon will be displayed in the ExpressAlign® pop-up screen for each suggested procedure.

The procedure created by ExpressAlign® will be displayed in the vertical procedure bar on the right side of the screen.

Procedures displayed with yellow text in the ExpressAlign® pop-up screen refer to adjustments that must be made for the specified vehicle.

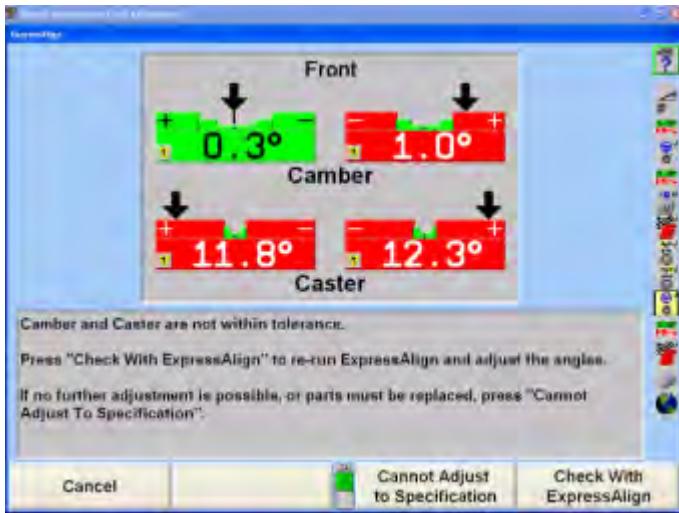
Procedures displayed with black text are for measurement verification or to provide assistance during the alignment.

Selecting "Print Analysis" from the softkey panel of the ExpressAlign® pop-up screen will print all measured angles with the recommended procedures required to adjust the angles.



Selecting "Use Half Tolerance" from the softkey panel of the ExpressAlign® pop-up screen will reduce the specification tolerance to half of the original equipment manufacturers recommended tolerance.

If one side of the vehicle is within specification, ExpressAlign® will allow the side that is out of specifications to be adjusted with the One-Sided Adjustments procedure. If you complete the alignment and an angle has not been adjusted to within specifications, ExpressAlign® will allow you to select "Cancel", "Cannot Adjust to Specifications" or "Check With ExpressAlign®".



Selecting "Cancel" will return you to the "Vehicle Measurements and Adjustments" primary screen.

Selecting "Cannot Adjust to Specification" will allow you to proceed with the angle not adjusted in ExpressAlign®.

Selecting "Check With ExpressAlign®" will create a new ExpressAlign® procedure and return you to the "ExpressAlign®" pop-up screen.

2.9. Alignment Procedure

Although the program begins a specific type of alignment, other types of alignment can be selected on the "Control Alignment Procedure" pop-up screen.

The aligner can be set to default to the type of alignment that will usually be performed. Some vehicle manufacturers recommend a particular type of alignment. This information is part of the stored factory vehicle specifications and will change the aligner to the recommended alignment type when the specifications are recalled, regardless of the default selection.

2.9.1. Adjustment Order

The vehicle should be adjusted in the following order:

Rear Camber (if adjustable)

Rear Toe (if adjustable)

Front Camber/Caster (if adjustable)

Front Toe



NOTICE

If a sensor is removed from the during vehicle adjustment, that sensor must be re-compensated when it is re-mounted.

If a measurement displays in gray with no value shown and an error message is on the vehicle graphic, something is wrong with the sensor at the wheel indicated. The sensor may be disconnected, or an optical line of sight to another sensor may be blocked. When the error is corrected, the error message will disappear and the bar graph will return to normal. Refer to "Sensor Troubleshooting [64]."

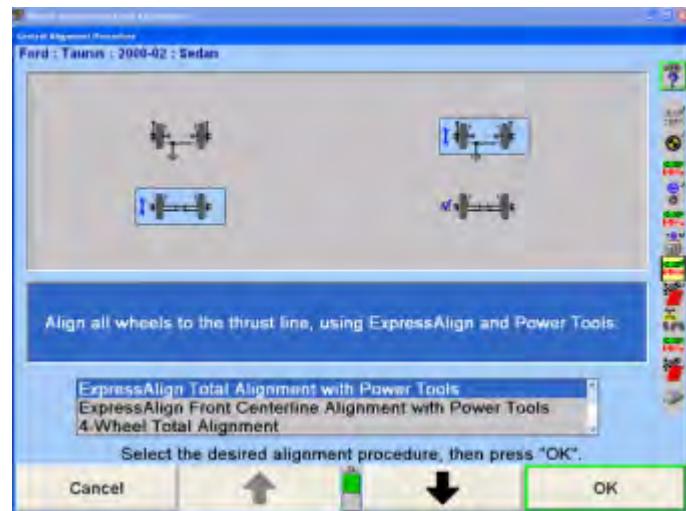
2.9.2. Selecting the Procedure

Press "Alignment Procedure", the "Control Alignment Procedure" pop-up screen will appear.



NOTICE

The Control Alignment Procedure pop-up screen may also be accessed by selecting Alignment Procedure from Aligner Setup. Refer to "Aligner Set-Up [164]."



Press ↑ or ↓ until the desired alignment procedure is highlighted. The steps required are illustrated when a procedure is highlighted. Refer to "Alignment Types. [283]"

Press "OK".



NOTICE

The steps required to perform an alignment procedure may not be exactly the same as the "Getting Started" example. Follow the screen prompts to perform any type of alignment.

2.9.3. Camera Based Alignment Reference

Camera Based Alignment Reference can be used only with Camera Based sensors and can be set up only after Camera Based sensors have been selected as the default

sensor type. To select sensor type, Refer to “[Setting Up the Sensor Type \[184\]](#)”.

This feature allows the alignment technician to select between using a plane parallel to the runways to determine wheel alignment angles (Runway Reference Plane) or using reference planes defined by the current live positions of the wheels (Live Reference Plane).

Using “Runway Reference Plane” to determine wheel alignment angles is identical to conventional sensors.

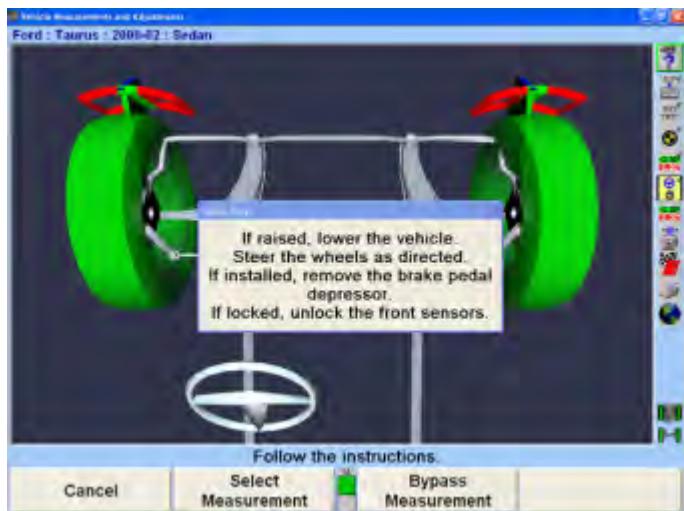
Using “Live Reference Plane” to determine wheel alignment angles allows warped or non-flat runways to be used.

The manufacturers’ alignment specifications are determined using runway planes (Runway Reference Plane).

To select Runway Reference Plane or Live Reference Plane,” Refer to “[Setting Up the Alignment Reference \[190\]](#),” for detailed instructions.

2.9.4. Measuring Caster, SAI, and Included Angle

The “Measure Caster” display provides guidance through the procedure to measure Caster or Steering Axis Inclination (SAI) and Included Angle (I.A.). At times, measuring SAI, I.A. or turning angle may be useful tools to help determine front suspension or steering system problems with a vehicle.



Horizontal bar graphs are used to indicate wheel position or angle position in relation to the preferred position or specification. The center of each bar graph represents the preferred position of the wheel(s) or angle.

The caster measurement display uses graphics and horizontal bar graphs to guide the steering of the wheels through the caster turn.

A wheel position indicator (either an “X” or an arrow) is positioned within the bar graph and shows the position of

the wheel(s). The wheel position indicator will be left of center if the front wheels are steered too far to the left, right of center if the front wheels are too far to the right, or in the center valley of the bar graph if the front wheels are steered correctly (null position).

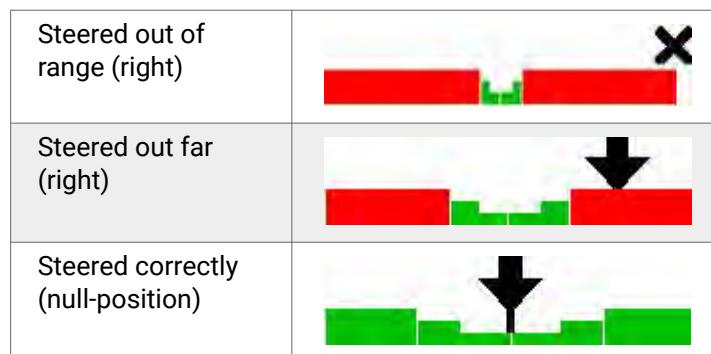
An “X” on a red bar graph indicates the wheels are steered beyond the range of measurement. Steer the wheels in the direction necessary to move the “X” toward the center of the bar graph. The “X” will change to an arrow when the wheel comes into range of the bar graph.



NOTICE

Total toe conditions greater than 2 inches or 4 degrees should be corrected prior to steering caster.

As the wheels are steered in the proper direction, the arrow will move toward the center. As the wheel approaches the acceptable tolerance, the center area will get larger. When the wheel is within tolerance, the bar graph will change to green.



When the wheel is in the proper position, the arrow will be over the thinnest section of the bar graph. The aligner will save the measurements and the bar graph will disappear.



NOTICE

It is not necessary to perfectly center the arrow in the bar graph when steering to measure caster, caster and SAI/I.A., or SAI/I.A. The wheel position is acceptable when the arrow is positioned within the center valley of the bar graph.



NOTICE

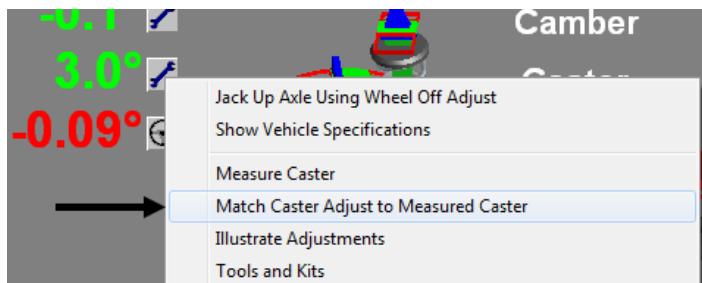
If WinAlign® determines that the brakes are applied or sensors are unlocked while measuring SAI, a prompt will appear asking you to check the sensors and/or brakes.

Match Caster Adjust to Measured Caster

Unlike conventional sensors, Camera Based Targets® should not be unlocked and re-leveled if the target has rotated so that it is not level after measuring caster.

If the Camera Based Sensor Targets® have rotated so that they are not level after measuring caster but before adjusting caster, "Match Caster Adjust to Measured Caster" should be selected from the caster flyout menu.

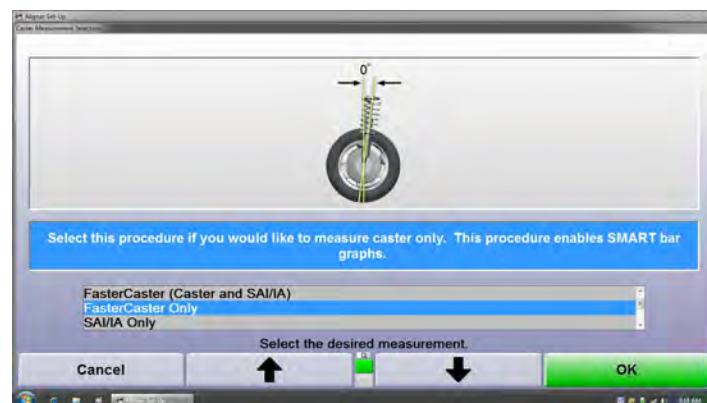
This will allow WinAlign® to electronically compensate for rotation.



2.9.5. Measuring Caster

Faster Caster Only

WinAlign® 14.3 and above features an additional caster measurement option "Faster Caster® Only" measures caster only without the use of a brake pedal depressor. "Faster Caster® Only" can be enabled as the default measurement through aligner setup, or chosen from the caster steer screen by selecting "Select Measurement".

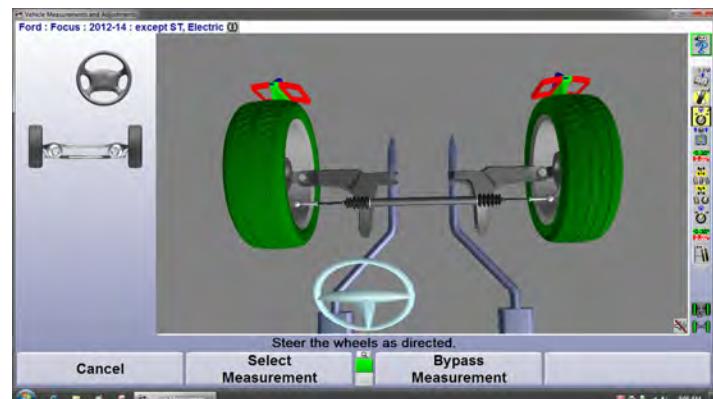


NOTICE

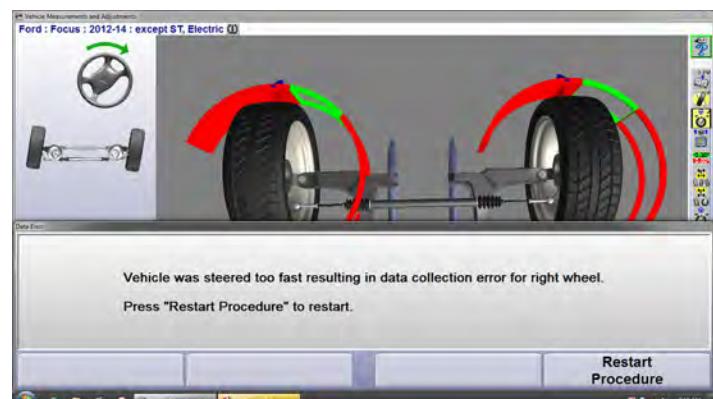
"Faster Caster® Only" is only available when using the HawkEye Elite® configuration (Hx421 sensor type and TD/WATD target type).

Faster Caster® can also be chosen from the Caster Steer screen with the "Select Measurement" softkey.

Steer the vehicle as directed.



Steering too fast may cause a data collection error and the procedure will have to be restarted.

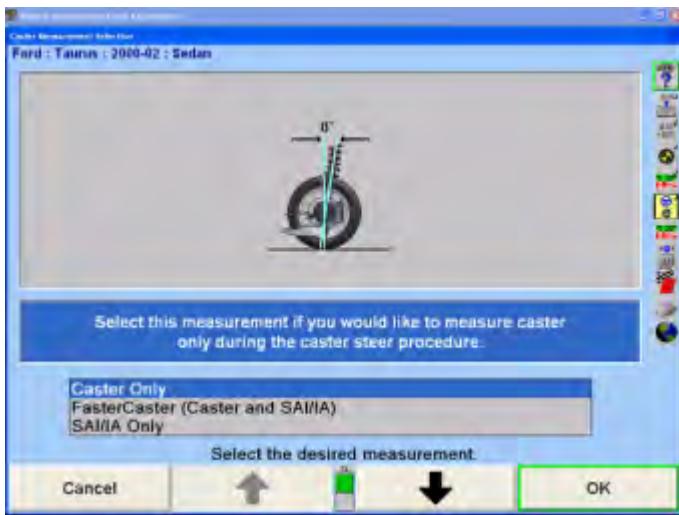


Faster Caster® without the brake pedal depressor is not available on all accounts. The technician will be instructed to use a brake pedal depressor as with a normal caster steer procedure.

Caster Only

Press "Measure Caster" on the "Vehicle Measurements and Adjustments" primary screen. The "Caster and SAI Measurement" pop-up screen will appear. If "Caster Only" is not the default:

Press "Select Measurement", the "Caster Measurement Selection" pop-up screen will appear.



Press \uparrow or \downarrow until "Caster Only" is highlighted. Press "OK" to select the measurement. The "Caster and SAI Measurement" pop-up screen will appear.



NOTICE

This selection will not change the aligner default setting. When the aligner is reset, the default settings will be applied.

Lower vehicle if raised and remove brake pedal depressor if installed. Loosen the front sensor lock knobs.

A single bar graph is displayed along with a prompt to steer the wheels to the straight-ahead position.

Steer the wheels until the wheel position indicator is within the center valley of the bar graph and hold steady. The aligner will save the measurements and the display will change to show two bar graphs and prompt to steer left. Depending on conditions, you may be required to press "Ready" to continue.

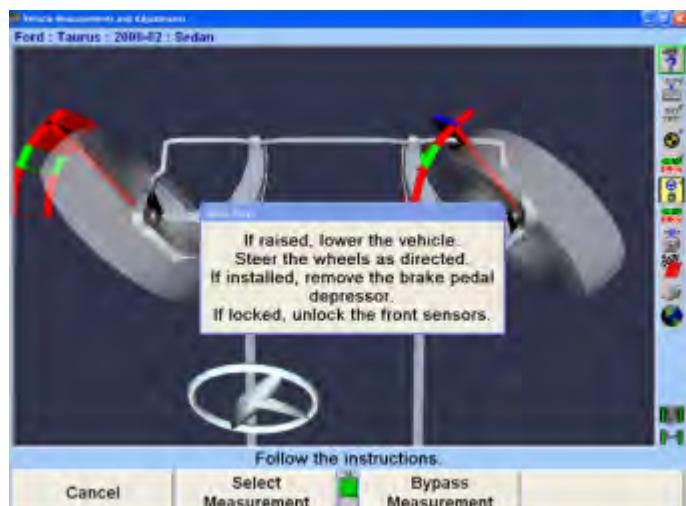
The left bar graph indicator is controlled by the left wheel, the right bar graph indicator by the right wheel.

Observing the bar graph display, steer the wheels to the left until either wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady.

The measurements will be saved and the bar graph will disappear.

Continue to steer the wheels until the remaining wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady until that bar graph disappears.

Two new bar graphs will appear and the steering wheel display will indicate to steer to the right.

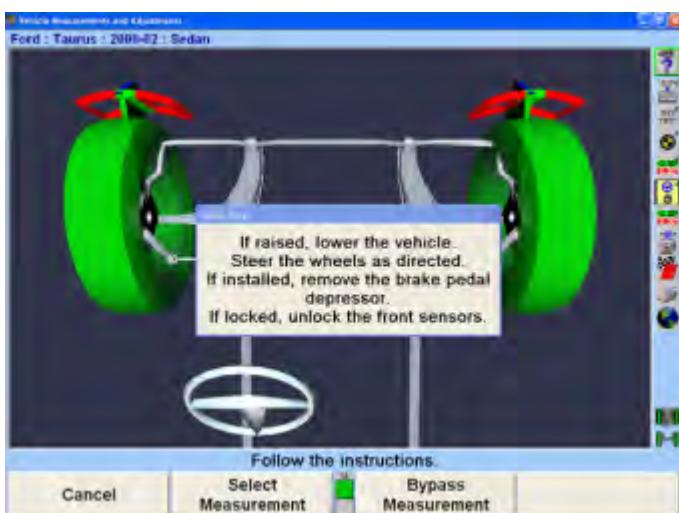


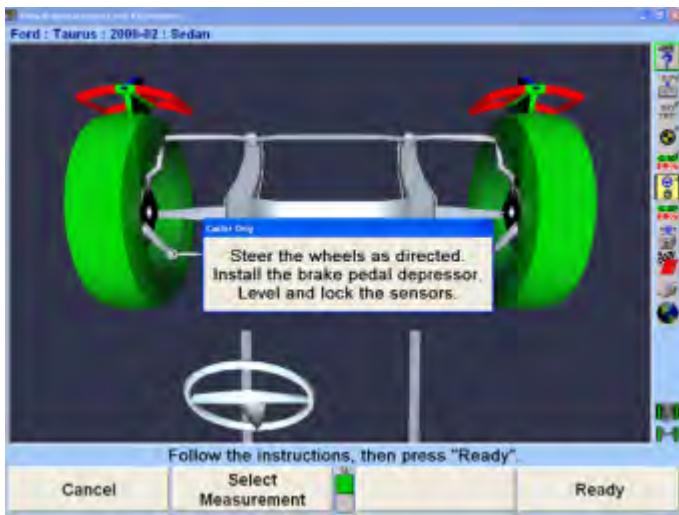
Observing the bar graph or VirtualView display, steer the wheels to the right until either wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady.

The measurements will be saved and that bar graph will disappear. Continue to steer the wheels as indicated until the remaining wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady until that bar graph disappears.

A single bar graph will appear.

Steer the wheels straight ahead until wheel position indicator is within the center valley of the bar graph. Install the brake pedal depressor and level and lock the sensors.





Press "Ready" and the "Vehicle Measurements and Adjustments" primary screen will reappear.

These are the initial measurements of the vehicle. Press "Save Before Measurements" to save them for the printout. If "Set steering wheel status when measurements are saved" is enabled from Aligner Setup, the screen will change to the "Save Before Alignment Measurements" pop-up screen. Refer to "[Aligner Set-Up \[164\]](#)".



If "Set steering wheel status when measurements are saved" is disabled from Aligner Setup, and all measurements are stable, and the vehicle is steered straight ahead, then the "Save Before Alignment Measurements" pop-up screen will be continued through. The screen will briefly appear and the settings will be automatically saved if everything is stable.

Make sure the vehicle is in the correct condition to save the before measurements. Jounce the vehicle, then steer the wheels straight ahead until the bar graph indicates a null position.

For printouts, highlight the steering wheel level status. This message will be displayed on printouts. In ExpressAlign® it is necessary to steer ahead prior to saving the current status.

Press "Ready". When the measurements are stable, the program will save them for ExpressAlign®, Work Management printout.

The system will save the measurements and the screen will return to the "Vehicle Measurements and Adjustments" primary screen if ExpressAlign® is not enabled.

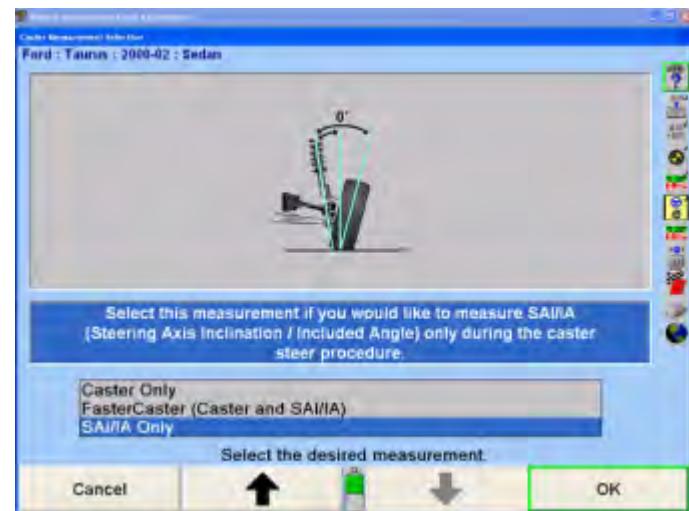
2.9.6. Measuring SAI and Included Angle

Press "Measure Caster" on the "Vehicle Measurements and Adjustments" primary screen. The "Caster and SAI Measurement" pop-up screen will appear.

If measuring SAI/I.A. Only is not the default:

Press "Select Measurement", the "Caster Measurement Selection" pop-up screen will appear.

Press \uparrow or \downarrow until SAI/I.A. Only is highlighted.



Press "OK" to select the measurement. The "Caster and SAI Measurement" pop-up screen will appear.



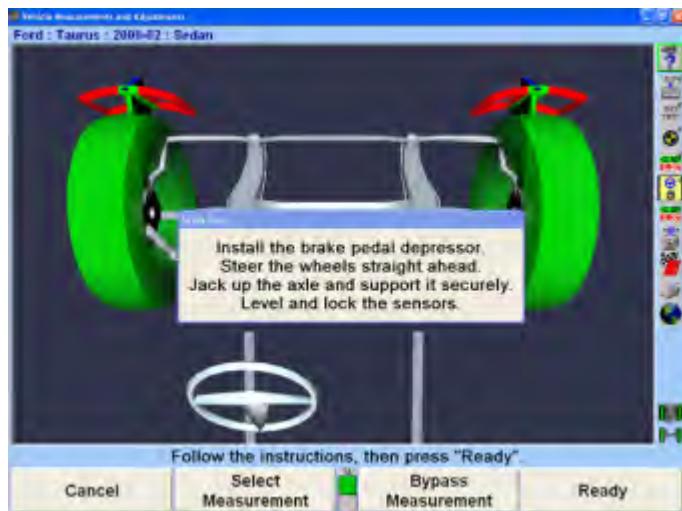
NOTICE

This selection will not change the aligner default setting. When the aligner is reset the default settings will be applied.

Lock the front brakes using a brake pedal depressor.

Steer the wheels straight ahead.

Jack up the front axle until the front wheels clear the turning angle gauges or rack. The jack should securely support the vehicle. Level and lock the sensors.



Press "Ready".

Perform the SAI turn while observing the bar graphs in the same manner as the caster turn. Refer to ["Measuring Caster \[79\]"](#) below. When SAI measurements are completed, the screen will change to the Vehicle Measurements and Adjustments primary screen with the SAI and I.A. measurements shown.

Lower the vehicle.



NOTICE

While lowering the vehicle, camber and SAI measurements will change. However, included angle measurements will remain constant.

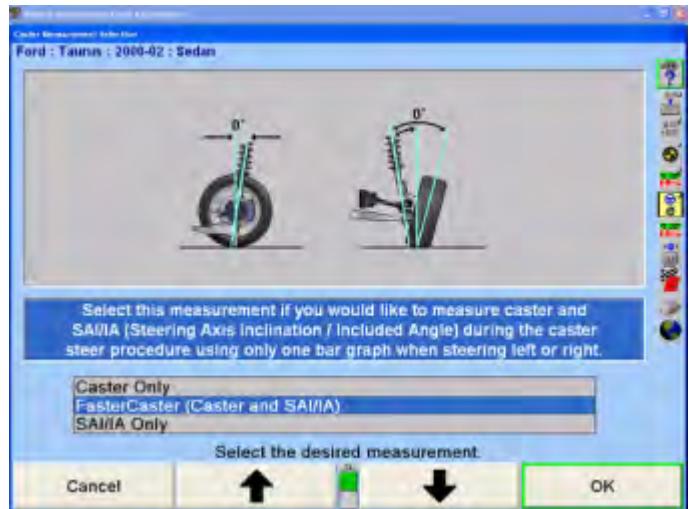
2.9.7. Faster Caster - Measuring Caster and SAI/I.A. Simultaneously

The Faster Caster® measurement feature uses a single bar graph indicator instead of using both a left and right bar graph indicator.

Press "Measure Caster" on the "Vehicle Measurements and Adjustments" primary screen. The "Caster and SAI Measurement" pop-up screen will appear.

If measuring Faster Caster® (Caster and SAI/I.A.) is not the default: Press "Select Measurement", the "Caster Measurement Selection" pop-up screen will appear.

Press or until Faster Caster® (Caster and SAI/I.A.) is highlighted.



Press "OK" to select the measurement. The "Caster and SAI Measurement" pop-up screen will appear.



NOTICE

This selection will not change the aligner default setting. When the aligner is reset, the default settings will be applied.

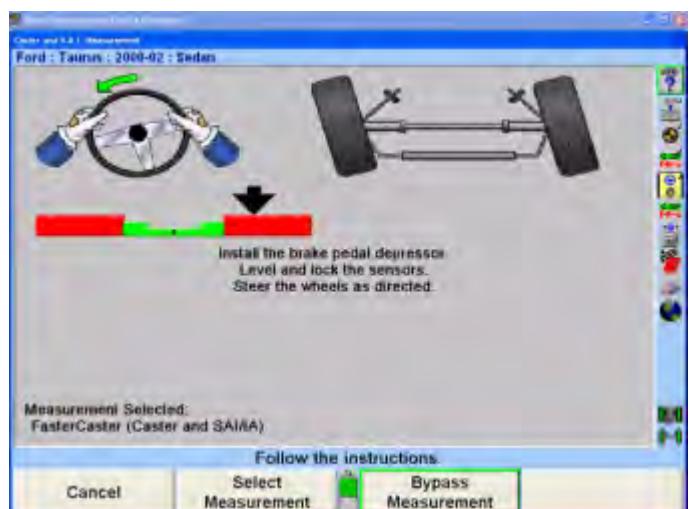
Lock the front brakes using a brake pedal depressor.

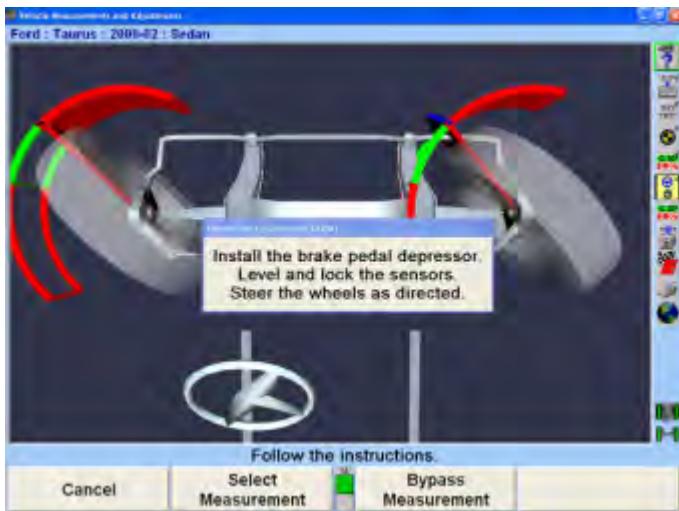
Steer wheels straight ahead.

Level and lock the sensors.

Press "Ready".

The aligner will save the measurements and the display will change to show a bar graph and prompt to steer left.

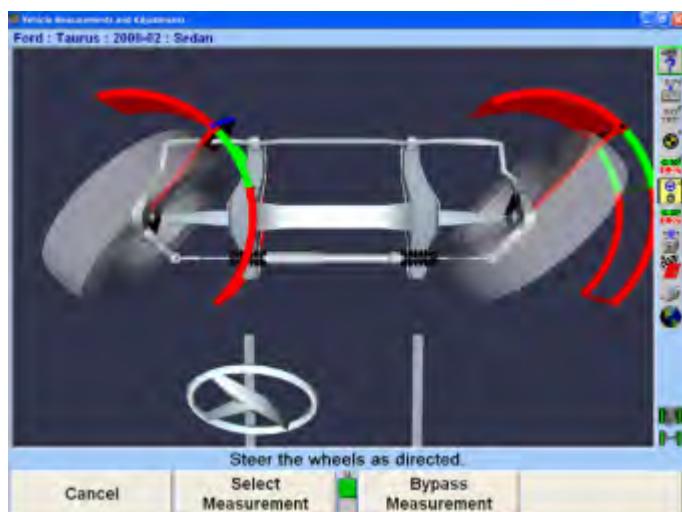




The single left bar graph indicator is controlled by the left wheel.

Observing the bar graph display, steer the wheels to the left until the wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady until the bar graph disappears.

A single right bar graph will appear and the steering wheel display will indicate to steer to the right.



Observing the bar graph display, steer the wheels to the right until the wheel position indicator is within the center valley of its bar graph. Hold the steering wheel steady until the bar graph disappears.

A single bar graph will appear. Steer the wheels straight ahead until wheel position indicator is within the center valley of the bar graph.

When the caster and SAI measurements are completed, the screen will change to the "Vehicle Measurements and Adjustments" primary screen with the caster, SAI, and included angle measurements shown.

2.9.8. Live Caster

If "Verify Caster Adjustment" is not selected in Common Alignment Preferences then the "Verify Caster Adjustment" step is not added to any alignment procedure. Therefore, live caster (Caster Adjust) is the caster measurement that is shown on all printouts under the label of "Caster".

To set up Verify Caster Adjustment, refer to "[Aligner Set-Up \[164\]](#)." Refer to "[Setting up the Common Alignment Preferences \[171\]](#)," for detailed instructions.

2.9.9. Lock-Check Sensor Checking Feature

If either or both of the front conventional sensors are not locked when they are supposed to be locked while measuring Caster/SAI, a Lock-Check® warning message is displayed as soon as the alignment technician starts to steer and a sensor rotates in the wheel adaptor.

Additionally, if the brake pedal depressor is not applied during a Caster/SAI procedure for which the brakes should be locked, the Lock-Check warning message is displayed. The Lock-Check feature can detect the absence of a brake pedal depressor in most cases, however there are some vehicles and conditions under which this condition is not detectable by the Lock-Check feature.

The warning allows the alignment technician to correct the problem and restart or ignore the problem.

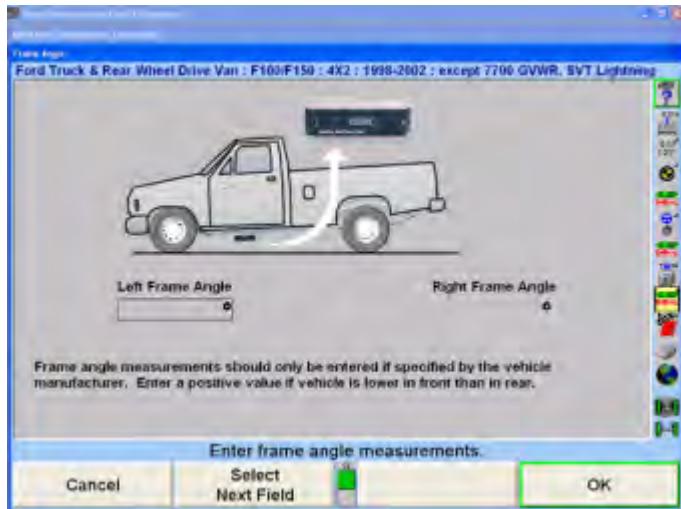
2.10. Additional Measurements

Selecting "Make Additional Measurements" from the "Vehicle Measurements and Adjustments" primary screen provides a choice of additional measurement procedures.

2.10.1. Frame Angle Measurements

Available for cars and light trucks, this feature is an adaptation of the WinAlign® Heavy Duty software frame angle measurement, which allows proper display of caster for a vehicle that is not level.

Primarily for light duty trucks, WinAlign® software will automatically prompt for a frame angle measurement when the vehicle manufacturer specifies that a frame angle measurement should be used while performing an alignment.



Enter the "Left Frame Angle" and then enter the "Right Frame Angle". Then select "OK".

Frame Angle can also be accessed by pressing "Make Additional Measurements" on the "Vehicle Measurements and Adjustments" primary screen. The "Additional Angles Measurement" pop-up screen will appear.

2.10.2. Measuring Ride Height

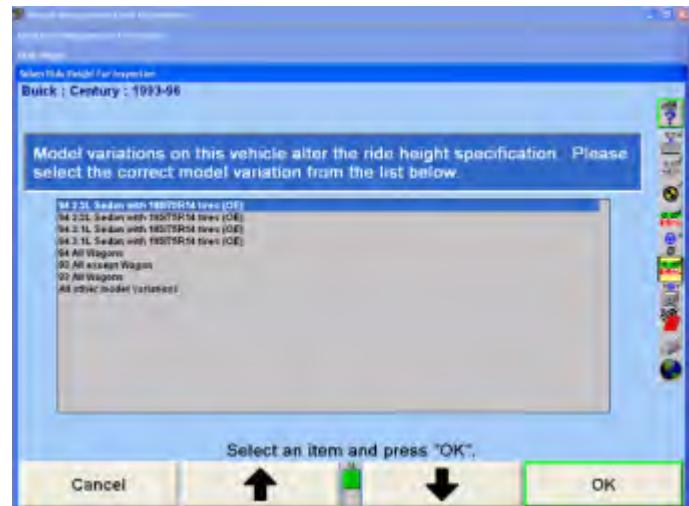


NOTICE

Ride height specifications should be used only as an initial screening test. Measure ride height using the OEM procedure to verify that components meet the OEM requirements.

To access Ride Height select "Make Additional Measurements" from the "Vehicle Measurements and Adjustments" primary screen and select ride height. Ride Height can also be added in Set up to be included in the Alignment Procedure.

The manufacturer may vary ride height specifications based on suspension and tire options. Those vehicles will have an additional identification screen listing the suspensions or tire options.



Press ↑ or ↓ to highlight the model variation that applies to the vehicle being measured. The "Ride Height" pop-up screen will appear with the specification. If the model variation is tire size, then select the tire size that is the original equipment of the vehicle.



NOTICE

Lower and jounce the vehicle before measuring Ride Height.

Three methods of entering the measurements are available: Manual measurement using keyboard entry.

Electronic measurement using the Romess Inclinometer (Mercedes Benz Only)

Electronic measurement using the Ride Height Targets®

Measuring Ride Height Using the Keyboard

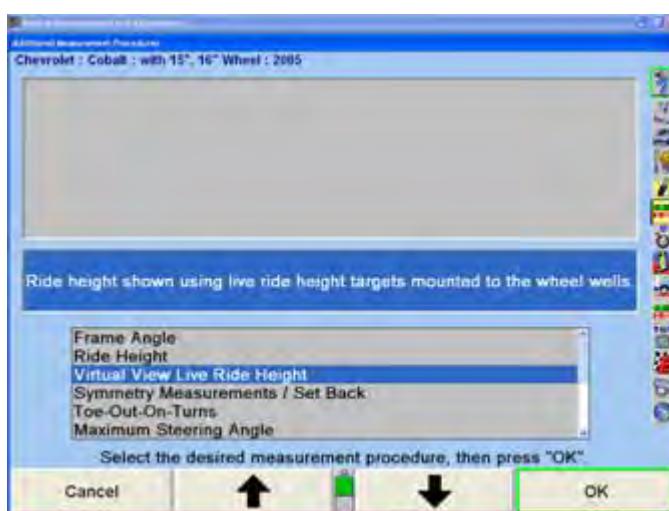
For manual measurement and keyboard entry: Press "Enter With Keyboard" to enter measurements using the keyboard. Measure the distance from the mark on the center casting of the wheel adaptor to the wheel well.

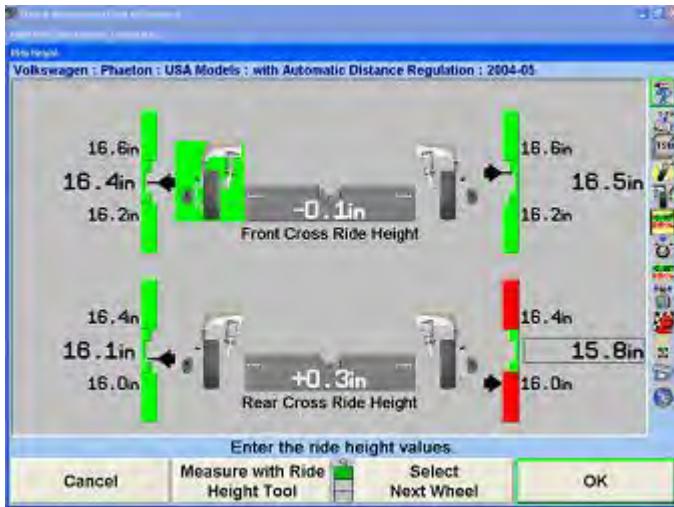


NOTICE

Make sure that the wheel adaptor is vertical.

Enter the measurement from the keyboard.





Press "Select Next Wheel", ENTER, TAB or to highlight the next wheel or SHIFT + TAB to highlight the previous field. The program will display the measurement next to the wheel. The center of the corresponding tire on the screen will turn green if the measurement is within specifications or red if out of specifications. It will turn blue if the specifications are not available. Repeat this procedure with the other wheels.

When the ride height of all the wheels has been measured, press "OK" to save the measurements for printout on the alignment summary. Ride Height can be re-entered at any time while on the ride height screen. Simply press "Select Next Wheel", ENTER, TAB or to highlight the next wheel or SHIFT + TAB to highlight the previous field. Re-measure the distance from the mark on the center casting of the wheel adaptor to the wheel well, and then enter the measurement using the keyboard.



NOTICE

Make sure that the wheel adaptor is vertical.

Vertical bar graphs and an illustration of a tire are used to indicate vehicle height in relation to the specification. The center of the bar graph represents the specification.

The large numerical values on the outside of the bar graphs represent the actual measurement. The ideal or preferred adjustment would find the indicator arrow next to the white line of the center bar and the numeric value reading the preferred specification for the vehicle.

Measuring Ride Height Using Ride Height Targets

Ride height can be critical to proper alignment in many vehicles. Improper ride height can affect most alignment adjustments. It can also be a sign of worn or damaged suspension components. Using the ride height Targets® to show live measurements is a great tool for adjusting ride

height without measuring tapes or multiple trips around the vehicle. Any adjustments made using the ride height Targets® is shown instantly, making the job of adjusting ride height much easier.

Ride Height Targets® require WinAlign® 9.0 or higher and DSP600 or HawkEye Targets®.

Installing the Ride Height Targets

Clean an area on the vehicles wheel well, directly above the spindle. Apply adhesive strip, 162-122-2, to the ride height target.



NOTICE

Replace the adhesive strip when it becomes excessively dirty or loses its adhering ability.

Secure ride height target to vehicle with adhesive strip, 162-122-2, at the highest point of the wheel well, directly above the spindle. The target should face the same direction as the sensor Targets®. Make sure the lip on the target is contacting the underside of the fender before pressing the adhesive against the vehicle.



WinAlign® will display an alert if the target is placed incorrectly. Follow the on-screen directions to correct.

Repeat for each wheel.

VirtualView® Live Ride Height



NOTICE

VirtualView® Live Ride Height requires using Ride Height Targets®. VirtualView must be enabled in Set-up to show VirtualView Live Ride Height. For more information on Live Ride Height Targets® refer to [Form 5375-T](#).

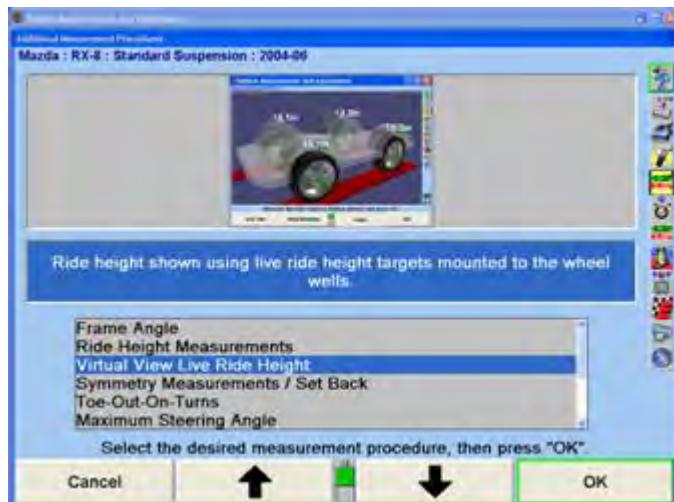
VirtualView Live Ride Height displays a live reading of the height difference between the fender well and the spindle. This can be very helpful when adjusting vehicles with torsion bar, air ride or other adjustable ride height suspension.



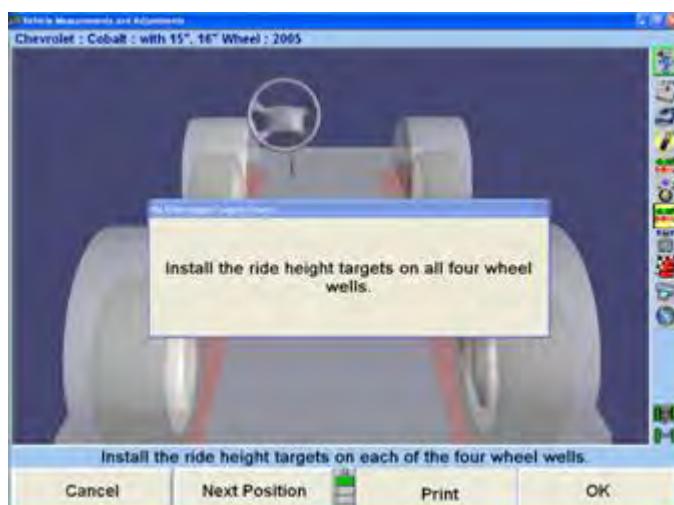
TIP

VirtualView Live Ride Height is a great tool to show the before and after measurements when installing lowering or lift kits on vehicles. Don't forget to give the customer printouts!

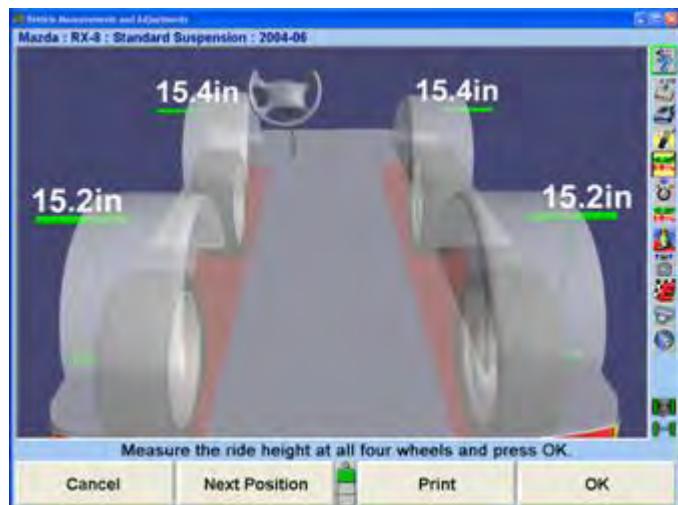
Certain vehicles that require ride height measurements will include this feature within the alignment procedure and will display automatically. If ride height is not automatically part of the alignment procedure, select "VirtualView Live Ride Height" from the "Additional Measurements" menu.



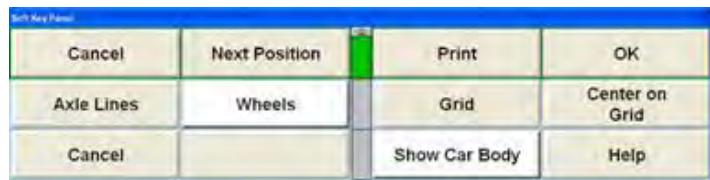
Install the ride height Targets® on each fender well in line with the spindle, as directed above.



As soon as the Targets® are detected by the cameras the values will be graphically displayed. Select "Next Position" to rotate vehicle image.



The VirtualView ride height image can be customized selecting different options as shown from the expanded softkeys below. All highlighted keys represent displayed items.



Remove the ride height Targets® when measurements and adjustments are complete.

Live Ride Height



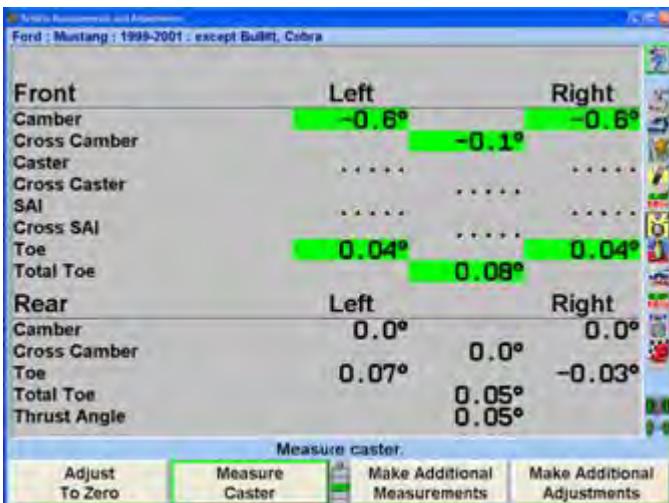
NOTICE

DSP600 or HawkEye Targets® must be installed along with the Ride Height Targets® for WinAlign® to show live ride height measurements.

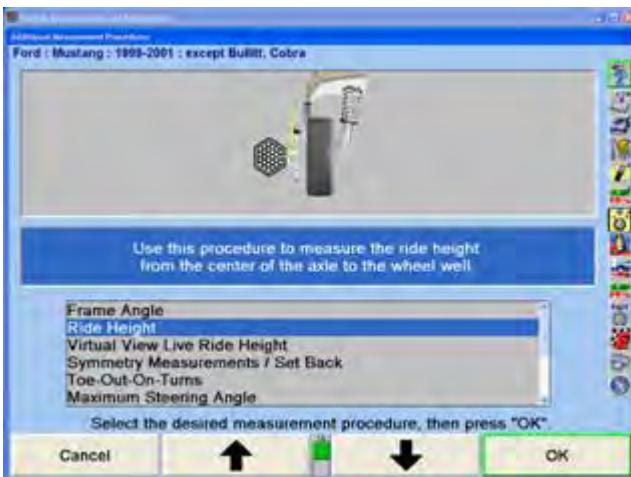
Live Ride Height measurements may be used with VirtualView® or in bar graph form. If not using Virtual View Live Ride Height, use the following instructions to measure ride height with the Live Ride Height bar graph screen as shown below.



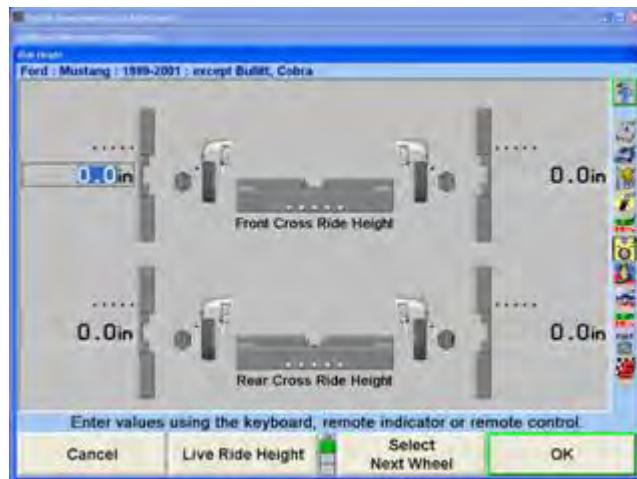
If the "Live Ride Height" screen does not appear automatically as part of the alignment procedure, select "Make Additional Measurements" from the "Vehicle Measurements and Adjustments" screen.



Select "Ride Height" from the menu and press "OK".



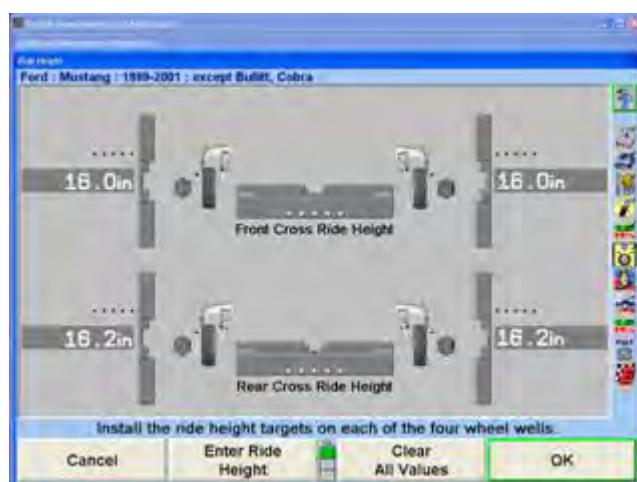
Select "Live Ride Height" to measure ride height using the ride height Targets®.



NOTICE

The bar graphs will remain gray unless the selected vehicle has specifications for spindle-to-fender measurements.

WinAlign® displays the "Ride Height" screen using live measurements.



NOTICE

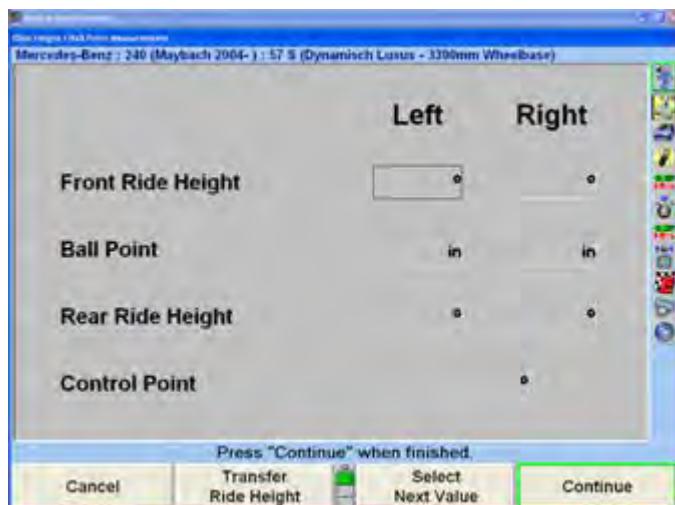
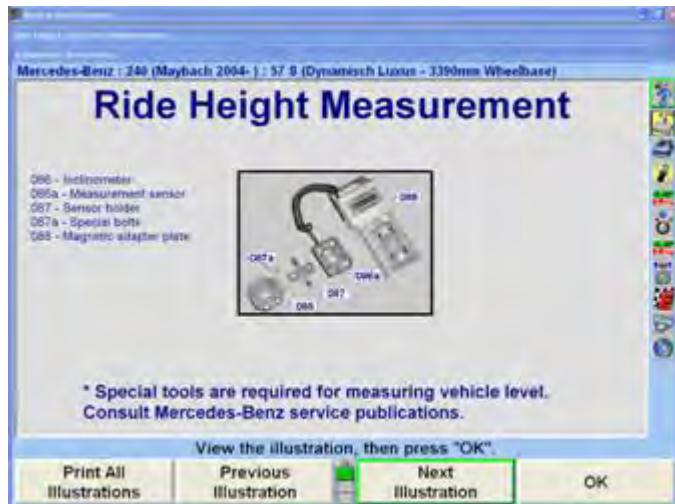
The bar graphs will remain gray unless the selected vehicle has specifications for spindle-to-fender measurements.

Remove the ride height Targets® when measurements and adjustments are complete.

Measuring Ride Height Using the Romess Inclinometer for Mercedes

When certain Mercedes-Benz vehicles specifications are selected ride height should be measured using a Romess inclinometer.

The M-B Romess tool CM-09606 is used to measure ride height which is required to obtain caster and camber specifications.



Basic instructions are available under "[Illustrating Vehicle Adjustments \[109\]](#)." For specific detailed instructions on the operation of the Romess Inclinometer, please refer to the documentation included with the tool from the manufacturer.

Hunter Handheld Inclinometer

WinAlign® 16® supports use of the Hunter Handheld Inclinometer for measuring the angle of components mounted on a vehicle. These angular measurements will be used to determine ride height dependent specifications. Follow the on-screen instructions for specific usage requirements.

Hunter Handheld Inclinometer Instructions

The Hunter Handheld Inclinometer can be used on some WinAlign procedure steps to measure the angle of components mounted on a vehicle. To use the Hunter Handheld Inclinometer, plug the inclinometer into the Hunter Remote Control in order to supply power and transmit angular measurements wirelessly to the alignment console. When connected, one of the LEDs on the inclinometer will flash on. WinAlign must be on an appropriate screen and edit entry box that will accept the angular measurement. The technician then holds the inclinometer up against the underside of the vehicle component. Each of the four legs of the inclinometer should rest correctly with the component. For ride height measurements, an illustrated adjustment will depict the exact placement of the inclinometer on the vehicle component. Care must be taken that the arrow graphic on the inclinometer is oriented in the correct direction. For ride height measurement, the arrow points toward the vehicle's left. For frame angle measurements, the arrow points toward the front of the vehicle. Once the inclinometer has been held stable for a few seconds, press the number "5" button on the remote control and the measurement will be transferred to the alignment console and displayed on the screen. No measurement will be transmitted if the inclinometer is not stable. Some screens have a limit on acceptable side-to-side tilt. If that limit is exceeded, an error message will be shown on the console screen and the measured value will be rejected.

The Hunter Handheld Inclinometer is enabled in setup as optional equipment.

Ride Height Bar Graphs

A bar graph with a red base and red fender indicates the measurement is below specification. A completely green bar graph and green fender indicates the measurement is within specification. Most vehicles have no upper limit in their specification. A gray bar graph and blue fender indicates specifications are not available.



To display the recommended specifications on the bar graphs, press "Show Specs". If the specifications are displayed, press "Hide Specs" to remove them from the screen.

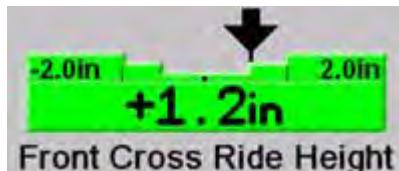


NOTICE

Ride height can be measured in inches or millimeters.

Cross Ride Height

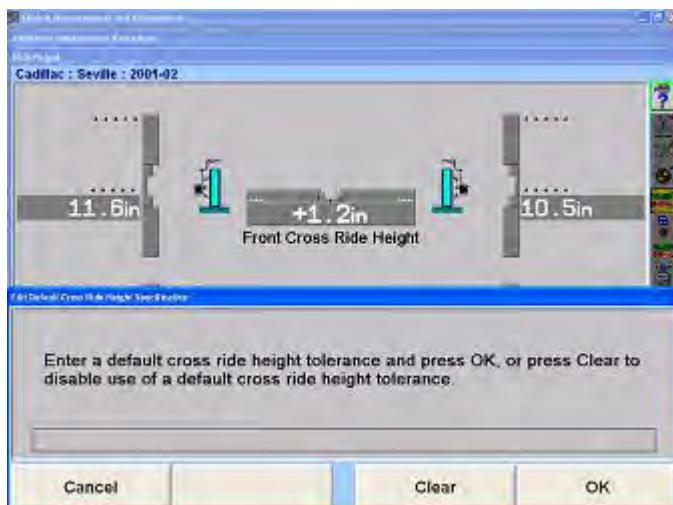
Ride Height also displays user-defined cross ride height bar graphs for each axle. This measurement will help to determine if a vehicle is sloping excessively side-to-side indicating potential problems with suspension, frame, or body components.



A positive arrow position on the graph represents a greater amount of ride height on the left side of the vehicle, a negative arrow position represents a greater value on the right side of the vehicle.

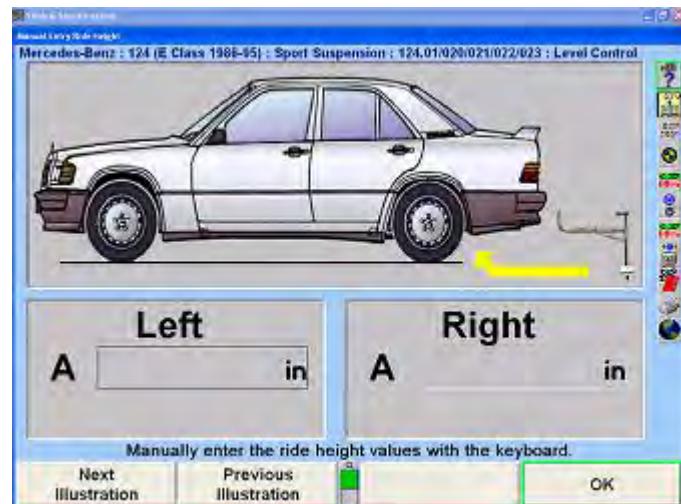
There is a "Default Cross Height Spec" softkey that allows entry or deletion of the user-defined specification. The user may define a default cross ride height specification to be applied to all cars for which there is no manufacturer's ride height specification.

Select "Default Cross Height Spec". A dialog box will open. Enter the default cross ride height spec and press "OK".



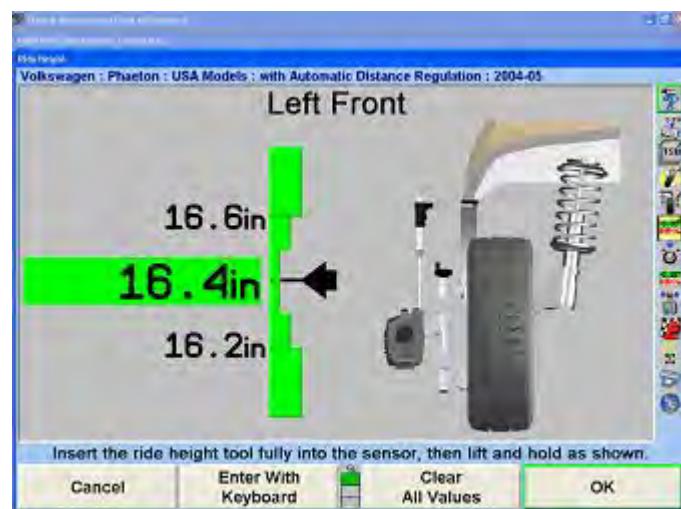
Ride Height Dependent Specifications

Some manufacturers require ride height to be measured to determine the appropriate alignment specifications. Enter ride height measurement(s) into the left and/or right dialog box of "Manual Entry Ride Height" pop-up screen. WinAlign® will use the ride height data to generate the recommended front and rear camber, caster, and toe specifications.



Zoom

When measuring Ride Height using the RH tool, the aligner will detect which wheel is being measured, and will zoom to the bar graph and image of that wheel. After the measurement has been taken, the fender will turn green if the measurement is within specifications, or red if it is out of specifications, as shown below.



The screen will remain on the individual wheel for about ten seconds, and then it will display all four wheels.

To disable the zoom, press "Disable Zoom".

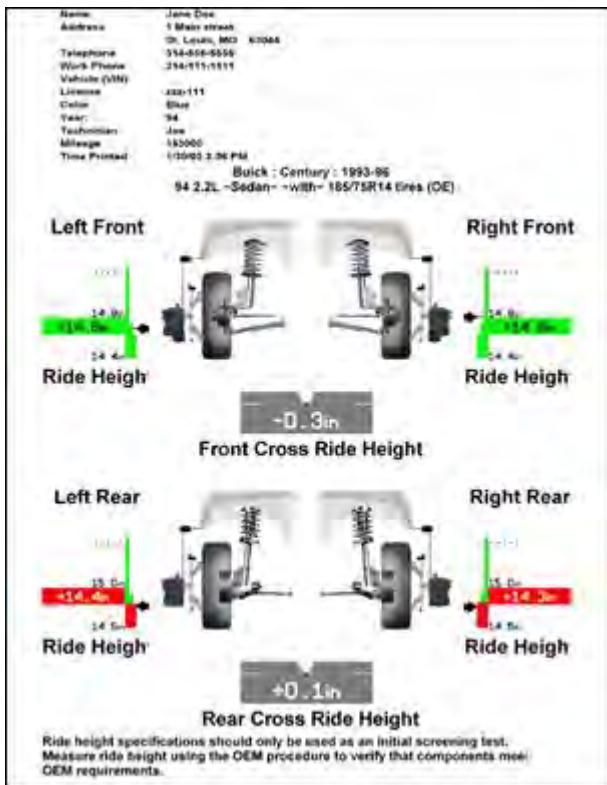


NOTICE

The screen will not zoom if the keyboard is being used to enter the measurements.

Printing Ride Height

When "Print Ride Height" is selected all the bar graphs shown on the screen and any specifications used will be printed.



2.10.3. Weight at Wheel

Weight at Wheel allows the measurement of the weight at each corner of the vehicle. Below is a list of the Weight at Wheel measurement softkey functions available.

Soft Key Panel			
Cancel	Print Screen		OK
Hide Specs	Zero Rear Axle Plates	Zero Front Axle Plates	Set Plate Configuration
Set Front Axle Cross Tolerance	Set Rear Axle Cross Tolerance	Set Vehicle Cross Tolerance	Help

"Hide Specs" will hide the tolerances in the bar graphs that were set using the last row of softkeys. "Hide Specs" will change to "Show Specs" once pressed. Selecting "Show Specs" will show the specs again.

"Zero Rear Axle Plates" and "Zero Front Axle Plates" will record the weight on the respective axle's weight measuring turnplates and use it as an offset for all future measurements. "Zero Rear Axle Plates" and "Zero Front Axle Plates" will change to "Clear Rear Axle Plates" and "Clear Front Axle Plates" once pressed. Selecting these softkeys again will clear the weight offset and change the softkey text back to "Zero Rear Plates" and "Zero Front Axle Plates."

"Set Plate Configuration" allows the user to configure the number of weight turnplates being used (2 or 4).

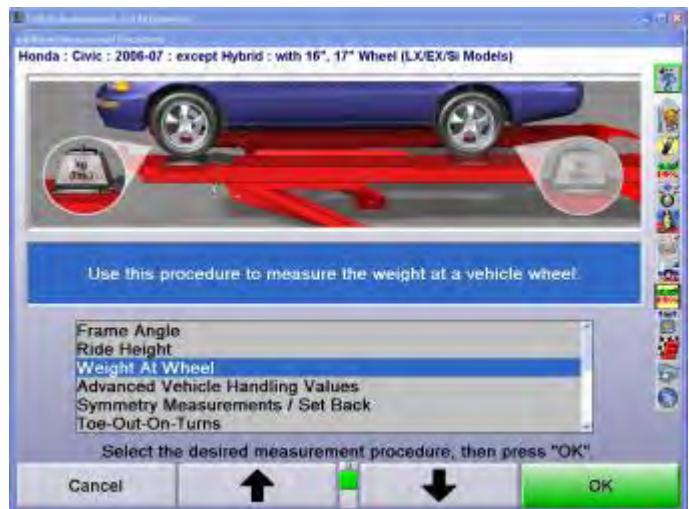
"Set Front Axle Cross Tolerance" and "Set Rear Axle Cross Tolerance" allows the user to specify the acceptable weight

difference between the right and left-hand sides of the vehicle on the respective axle.

"Set Vehicle Cross Tolerance" allows the user to specify the acceptable weight difference between the front and rear axles.

Measuring Weight at Wheel

Place a vehicle on the weight measurement turnplates. Select "Weight at Wheel" in the "Additional Measurement Procedures" popup screen.



Weights of each wheel will be displayed.

2.10.4. Advanced Vehicle Handling Values

Refer to the "[Glossary \[283\]](#)" for information on the Advanced Vehicle Handling Values.

2.10.5. Symmetry Angle/Set Back Measurements

The following measurements are available by selecting "Symmetry Measurements/Set Back" from the "Additional Measurement Procedures" screen. WinAlign® 11 includes VirtualView Symmetry Measurements/Setback."

- Front Set Back
- Rear Set Back
- Wheelbase Difference
- Left Lateral Offset
- Right Lateral Offset
- Track Width Difference
- Axle Offset

2.10.6. Set Back Procedures

To achieve best results, observe the following practices when measuring symmetry angles:



NOTICE

Use the same wheel adaptor mounting hardware (i.e. spade sleeves) on all wheels. Mixing different types of wheel adaptors will result in incorrect measurements.

Steer ahead.

Level and lock the sensors.

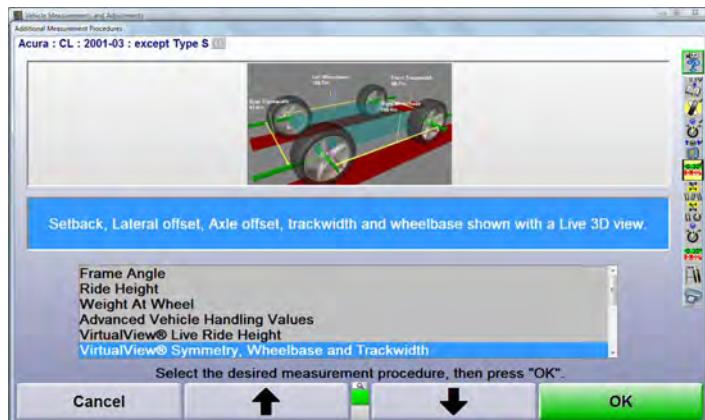
Make sure the wheel adaptor is vertical if the center casting has been lowered.



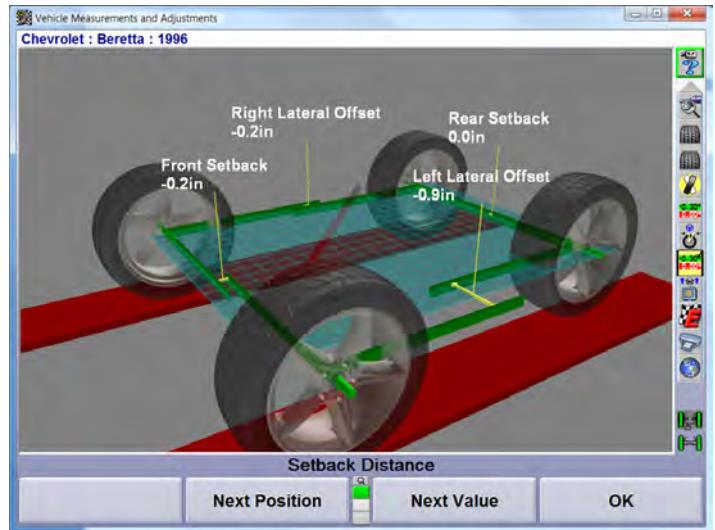
NOTICE

Set Back is accurately measured only when the wheels are steered symmetric about the centerline of the vehicle. This procedure will snapshot the Set Back and Symmetry Measurements when the wheels are steered straight ahead and the "Ready" key is pressed.

To measure Symmetry Angles and Set Back, press "Make Additional Measurements" on the "Vehicle Measurements and Adjustments" primary screen. The "Additional Measurement Procedures" pop-up screen will appear.



Press \uparrow or \downarrow to select "VirtualView® Symmetry, Wheelbase and Track width" or "Symmetry Measurements/Set Back" and press "OK."



Follow the instructions below as shown on the display.



NOTICE

Before using Symmetry Measurements, refer to Symmetry Angle/Set Back Definitions for definitions and tips.

Press "Ready". The screen will display a graphic representation of the symmetry measurements and Set Back with the measured values indicated.

If the Wheelbase and Track Width specifications are available for the current vehicle, the measurements will be displayed as linear distances.

OR

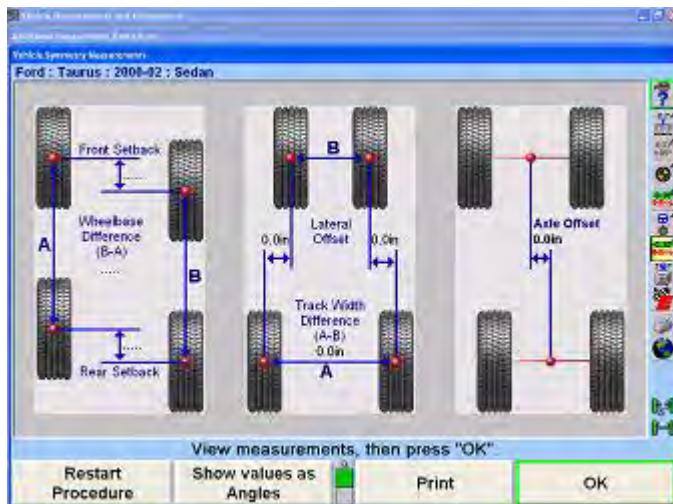
If the Wheelbase and Track Width specifications are not available for the current vehicle, the measurements will be displayed as angles.



NOTICE

To enter Track Width specifications, press Show Secondary Specifications on the Vehicle Specification primary screen. Enter the front track width into the Track Width Dialog Box. Press Show Rear Axle on the Vehicle Specification primary screen. Enter the rear Track Width into the Track Width Dialog Box.

Linear Distances

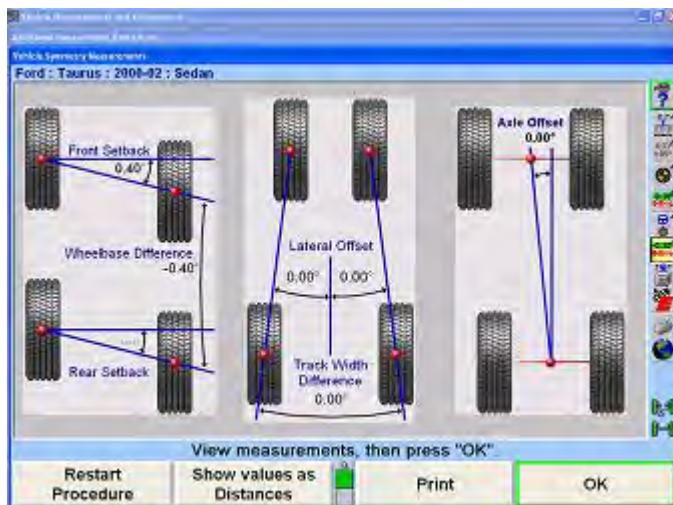


Front		Left	Right
Included Angle		0.0°	-0.03°
Steer Ahead		0.00°	0.00°
Steering Wheel Angle		0.00°	0.00°
Set Back		0.00m	0.00m
Turning Angle Diff.		0.00°	0.00°
Cross Turn Diff.		0.00°	0.00°
Ride Height		0.00m	0.00m
Maximum Left Steer		0.00m	0.00m
Maximum Right Steer		0.00m	0.00m
Wheelbase Difference		0.00m	0.00m
Track Width Difference		0.00m	0.00m
Lateral Offset		-0.10m	0.10m
Axle Offset		0.00m	0.00m
Rear		Left	Right
Set Back		0.00m	0.00m
Ride Height		0.00m	0.00m
Axle Offset		0.00m	0.00m

Save the "before" alignment measurements.

Adjust To Zero Measure Caster Make Additional Measurements Make Additional Adjustments

180° Angles



Press "OK". The screen will return to the "Vehicle Measurements and Adjustments" screen and the frozen symmetry measurements and Set Back measurements will be displayed as shown below.



NOTICE

These angles are shown on the screen and on the printout only if they have been measured.

2.10.7. Toe-Out-On-Turns

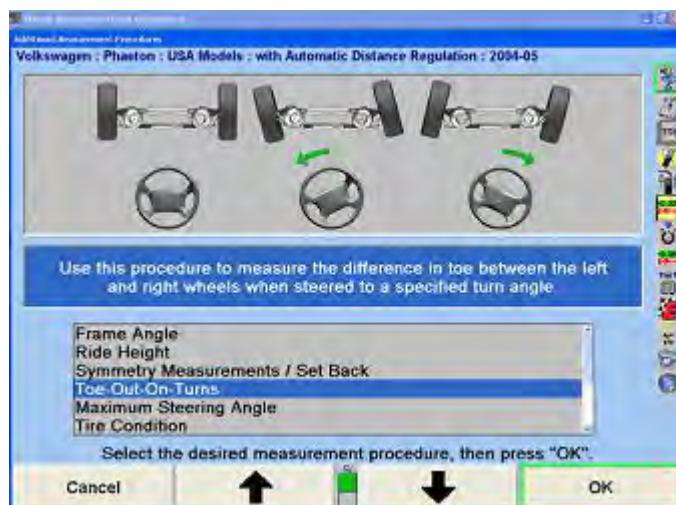


NOTICE

To perform this procedure DSP sensors with the optional Toe-Out-On-Turns kit and conventional, or Camera Based optical sensors are required. To select sensors, refer to ["Aligner Set-Up \[164\]"](#).

Measuring Toe-Out-On-Turns can help find worn or bent steering/suspension components.

Press "Make Additional Measurements" on the "Vehicle Measurements and Adjustments" primary screen. The "Additional Measurement Procedures" pop-up screen will appear.

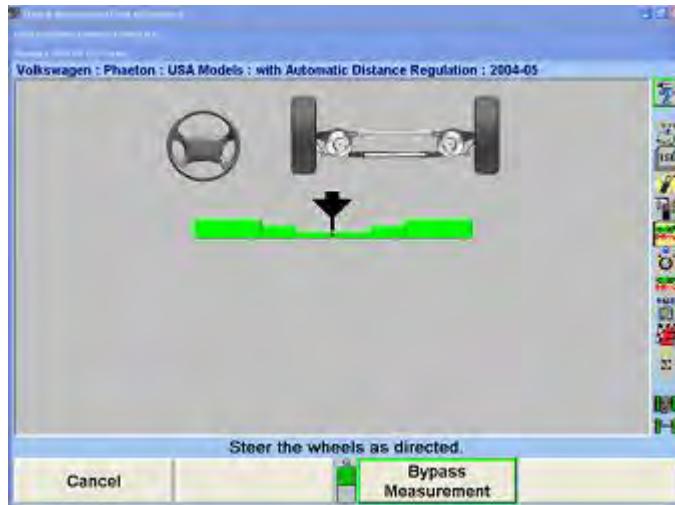


Press ↑ or ↓ to select "Toe-Out-On-Turns", then press "OK".

If using DSP sensors with Toe-Out-On-Turns kit:

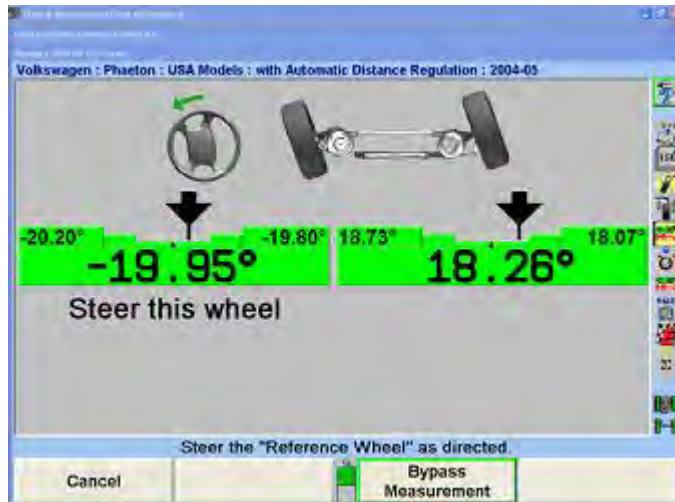
Connect elastic toe lines and adjust until taut.

A single bar graph on the display will prompt to steer the wheels to the straight ahead position. If the sensors are compensated, the bar graph will be red. If the sensors are not compensated, the bar graph will be gray.



Steer the wheels until the wheel position indicator is in the center valley of the bar graph.

The program will save the measurements and the display will change to show two bar graphs and prompt to steer left.

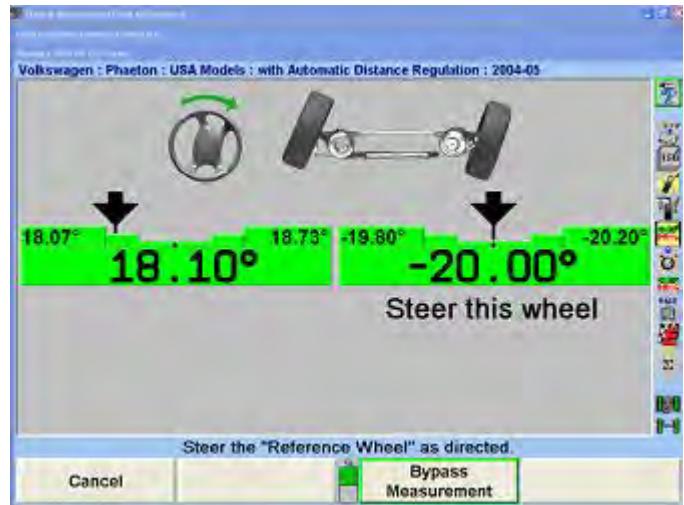


Observing the bar graphs, steer the wheels to the left until the indicated steer wheel position indicator is within the center valley of the bar graph.

Hold the steering wheel steady. The measurements will be saved.

If Toe-Out-On-Turns specifications have not been entered for the selected vehicle, steer to the desired angle, then press "Store Measurements". The measurements will be stored for later computations.

Two new bar graphs will appear.

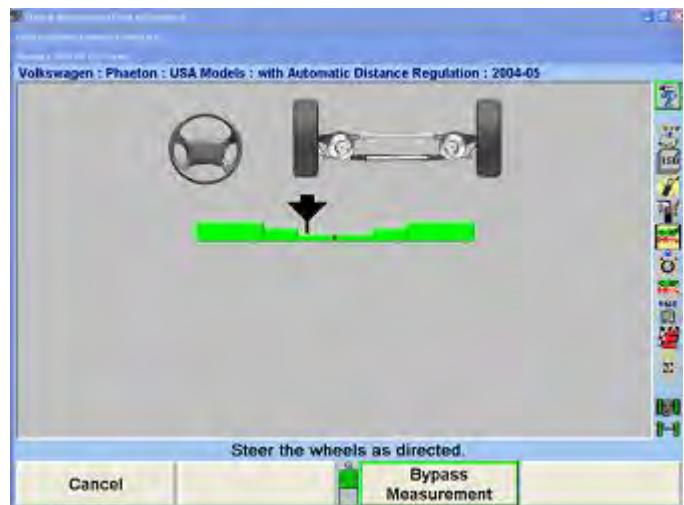


Observing the bar graph, steer the wheels to the right until the indicated steer wheel position indicator is within the center valley of the bar graph.

Hold the steering wheel steady. The measurements will be saved.

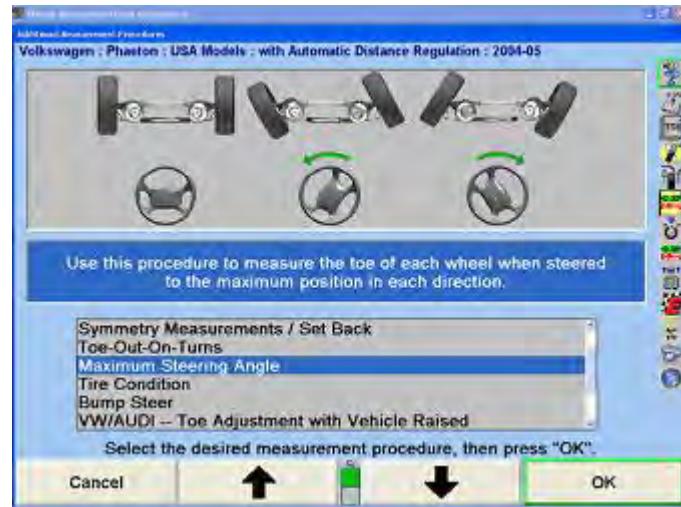
If Toe-Out-On-Turns specifications have not been entered for the selected vehicle, steer to the desired angle, then press "Store Measurements". The measurements will be stored for later computations.

A single bar graph will appear.



Steer the wheels until the wheel position indicator is within the center valley of the bar graph. The measurements will be saved and the screen will return to the "Vehicle Measurements and Adjustments" primary screen.

	Left	Right
Included Angle	.....	.....
Steer Ahead	-0.13°	.....
Steering Wheel Angle	0.00°	.....
Set Back	0.90°	.....
Turning Angle Diff.	-5.88°	-1.65°
Cross Turn Diff.	-4.24°	.....
Ride Height	16.4in	16.5in
Maximum Left Steer	.....	.....
Maximum Right Steer	-0.90°	.....
Wheelbase Difference	0.00°	.....
Track Width Difference	.....	.....
Lateral Offset	-0.03°	0.03°
Rear		
Set Back	0.00°	.....
Ride Height	16.1in	16.0in
Axle Offset	0.03°	.....
Measure caster.		
Adjust To Zero	Measure Caster	Make Additional Measurements



The Toe-Out-On-Turn results are displayed as "Left Turn Diff.", which is the toe difference between the left and right wheels when steered to the left, and "Right Turn Diff.", which is the toe difference between the right and left wheels when steered to the right. If these measurements are not within specifications, the steering mechanism should be inspected for worn or damaged parts.

2.10.8. Maximum Steering Angle



NOTICE

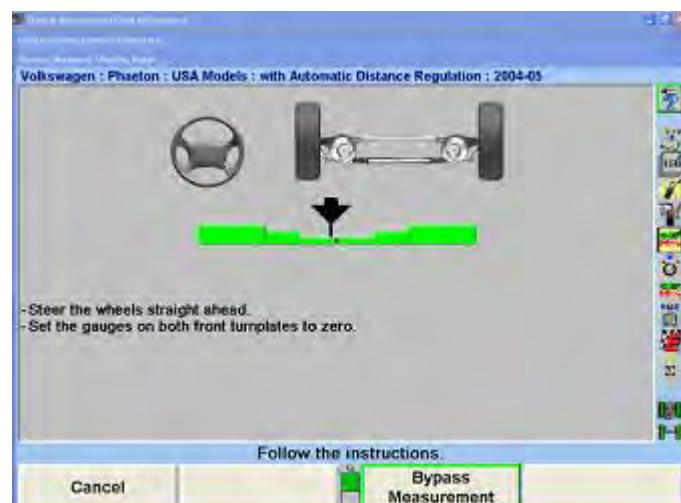
To perform this procedure DSP sensors with the optional Toe-Out-On-Turns kit are required. Manual entry of data is also available. To select sensor or turnplates, refer to "[Aligner Set-Up \[164\]](#)".

Measuring maximum steering angles (lock-to-lock steering) can help find worn or bent steering/suspension components. Press "Make Additional Measurements" on the "Vehicle Measurements and Adjustments" primary screen. The "Additional Angles Measurement" pop-up screen will appear.

Press ↑ or ↓ to select "Maximum Steering Angle", then press "OK". A single bar graph on the screen will prompt to steer the wheels to the straight ahead position.

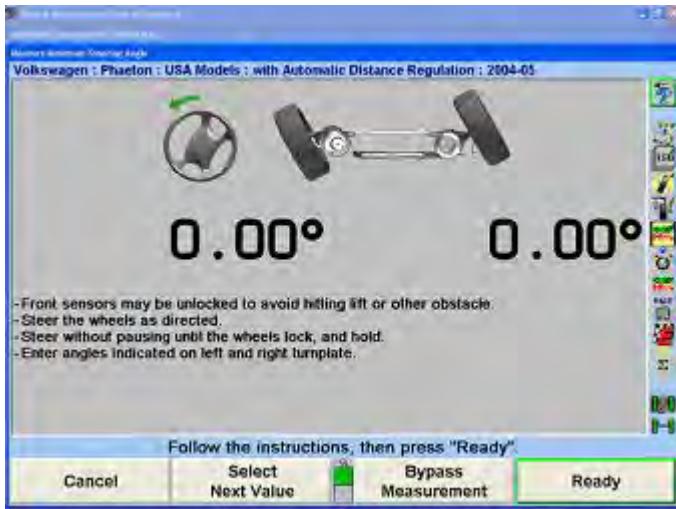
If using DSP sensors with Toe-Out-On-Turns kit, connect elastic toe lines and adjust until taut.

A single bar graph on the display will prompt to steer the wheels to the straight ahead position. If the sensors are compensated, the bar graph will be red. If the sensors are not compensated, the bar graph will be gray.



Steer the wheels until the wheel position indicator is in the center valley of the bar graph.

If a caster steer has been performed, press "Ready".



The program will save the measurements and the display will change to show two bar graphs and prompt to steer left.

Steer the wheels left until the steering wheel stops at the lock. The lock angles are displayed on the monitor.

If a wheel stops moving for more than two seconds after the measurement is above 25 degrees, the program will store the measurements. This feature is called Auto Store. If Auto Store is not desired, pressing "Disable Auto Store" can turn it off. If disabled, press "Store Measurements" when the wheels are at their maximum steering angle.



NOTICE

If the measurement is stored before the wheel reached the lock position, press "Cancel" and restart the procedure.

The screen will change to prompt for a right turn.

Steer the wheels right until the steering wheel stops at the lock. The lock angles are displayed on the monitor.

Once the measurement is above 25 degrees, if a wheel stops moving for more than two seconds the program will store the measurements.



NOTICE

If the measurement is stored before the wheel reached the lock position, press "Cancel" and restart the procedure.

Steer the wheel back to the center valley position of the bar graph.

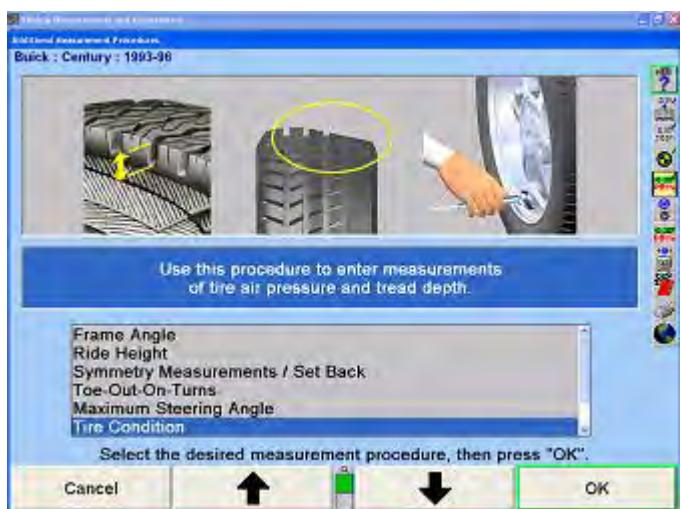
Press "Ready" if the caster measurement was previously taken.

The display will change to the alignment measurements display. The results are shown as "Maximum Left Turn" and "Maximum Right Turn". If these measurements are not within specifications, the steering mechanism should be inspected for worn or damaged parts.

2.10.9. Tire Condition

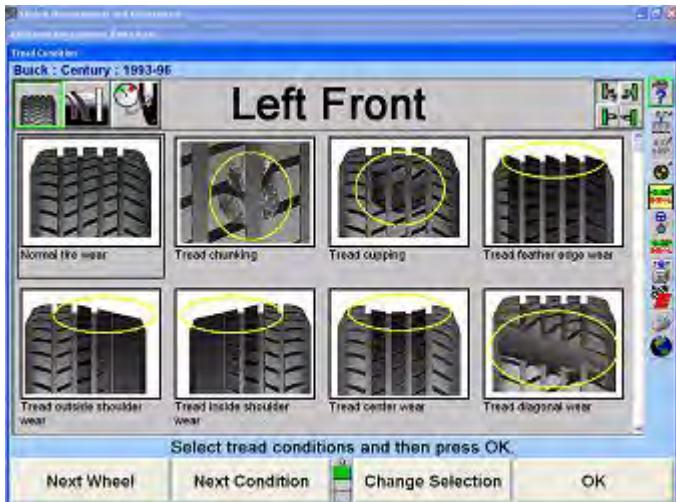
The tread condition, tread depth, and tire pressure should be evaluated, before continuing with the alignment procedure.

Tire Condition may be enabled in Aligner Setup as an alignment procedure or can be selected from "Additional Measurements". Tire inspection allows tread wear, tread depth, and tire pressure to be documented in the alignment procedure.



Having a tire with a tread condition, marginal tread depth, or not inflated to the manufacturers inflation specification may result in an out of alignment complaint even if the vehicles alignment is within specifications.

The selected tire for inspection can be changed by selecting "Next Wheel" or by selecting the desired wheel icon in the upper right-hand corner of the screen.

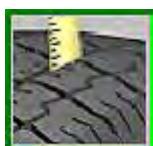


The inspection selection can be changed by selecting "Tread Condition", "Tread Depth" or "Tire Pressure" from the softkey menu or using the icons in the upper left-hand corner of the screen.

Tread Condition



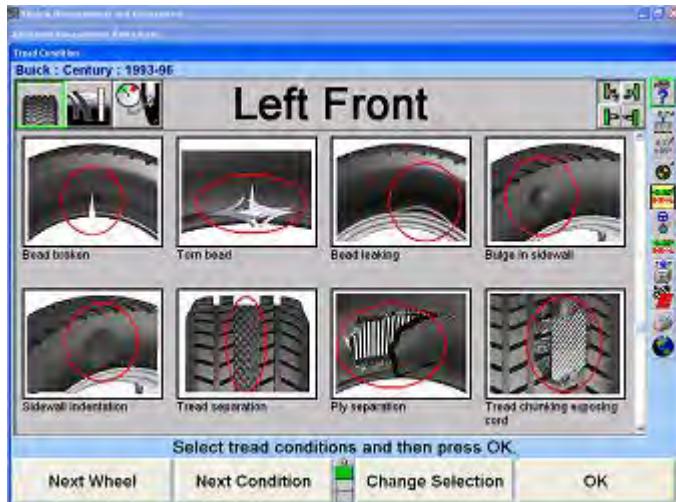
Tread Depth



Tire Pressure



From the "Tread Condition" screen, an assortment of tread conditions are available for selection for each wheel. "Normal Wear" selection will appear green when selected. Marginal conditions like cupping or feathering will appear in yellow. Hazardous conditions such as tread or ply separation will appear red when selected.



Selecting the "Tread Depth" icon will display the "Tread Depth" pop-up screen. The "Tread Depth" pop-up screen documents the tread depth of each tire.

Handheld Tread Depth Tool

The handheld tread depth tool operates on two "AA" size batteries. The attached clip may be secured to an operators belt or pocket for portability.

If enabled in the setup menu, the Handheld Tread Depth tool is integrated with the alignment process in WinAlign® 14.3 and above.

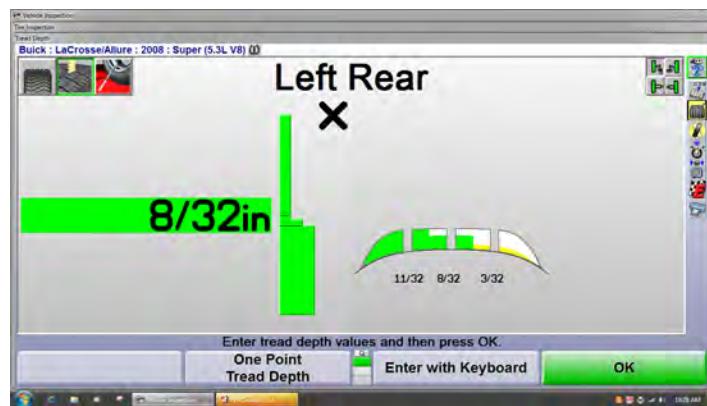
Press the "Wake Up" button to begin communication with the console. The tool LED's will indicate the specific location of the current measurement for both one point and three point measurements.



Depress the tread depth plunger into the tread of the tire and hold it steady until the reading is confirmed. The tool will vibrate when the reading is confirmed and automatically advance to the next location, indicated by the LED's and the measurement screen.

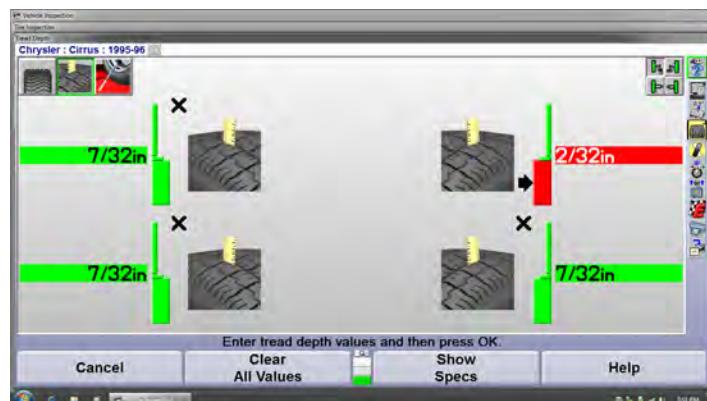
A three point measurement may be desired to accurately document an irregular tire wear pattern as measurements

are recorded for three locations across the tread surface. One or three point measurement procedures can be selected from the first row of softkeys.



Pressing the "Wake Up" button during the process will clear the previous measurement and step backward so that location can be re-measured.

The smallest measurement taken for each tire is entered into the corresponding data box for all four tires. Any tires with measurements that are under specifications are shown in red.



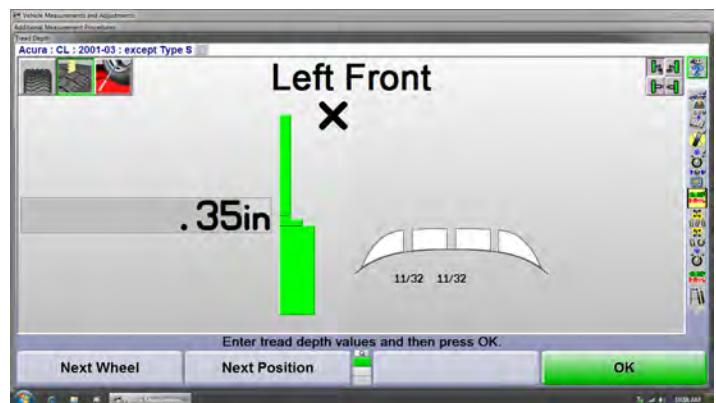
Specifications for pass, marginal and failed tread depth values as well as default one or three point measurement options are available in aligner setup. Refer to "[Tread Depth \[169\]](#)" for detailed instructions.

Manual Tread Depth Entry

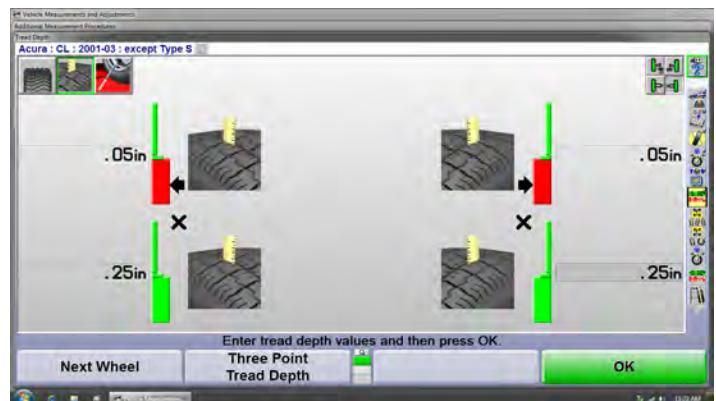
Readings can also be entered with the keyboard, measure the tread depth and enter the values in the corresponding fields.

Selecting "Three Point Tread Depth" or "Zoom In" allows the tread depth of each tire to be entered for one to three locations across the tread. Depth should be measured in even intervals across the entire tread area.

Enter the depth of each location then select "Next Position". Repeat this procedure for each tire by selecting "Next Wheel" (Figure 260).



The smallest measurement taken for each wheel is entered into the corresponding data box for all four tires. Any tires with measurements that are under specifications are shown in red.



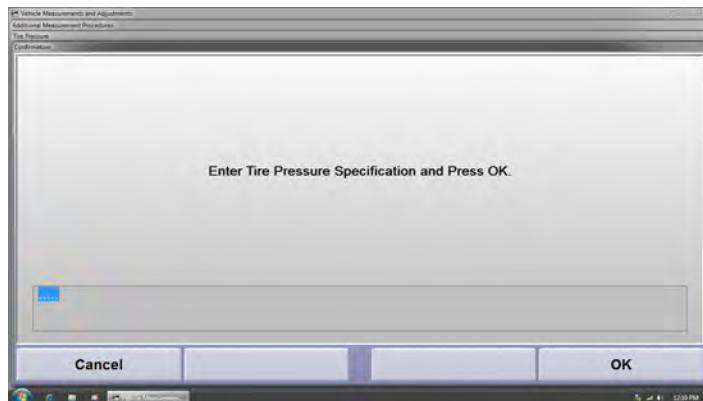
The measurement units and fail/marginal tread depth specifications can be changed in Aligner Setup. Refer to "[Setting Up the Alignment Measurement Units and Formats \[174\]](#)" and "[Tread Depth \[169\]](#)" for more information.

Tire Pressure

Selecting the "Tire Pressure" icon will display the "Tire Pressure" pop-up screen. The "Tire Pressure" pop-up screen allows you to document the inflation level of each tire. If all tires are set to the same specification, select "Filled to Spec".



Enter the tire pressure specification that all tires were set to and select "OK".



The tire pressure screen will be updated to show all tires filled to specification.

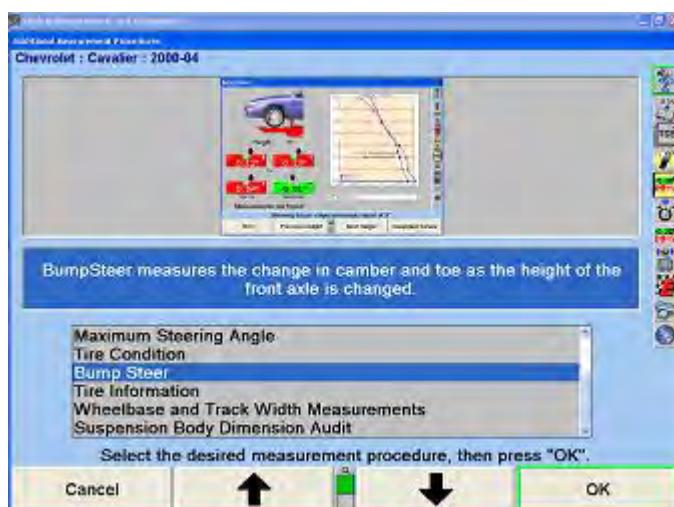
Selecting "Print" from any of the tire inspection screens will print the tire inspection information. Print should be selected after all tire inspection information has been entered.

After evaluating tread condition, tread depth, and tire pressure, select "OK" to exit the Tire Inspection procedure.

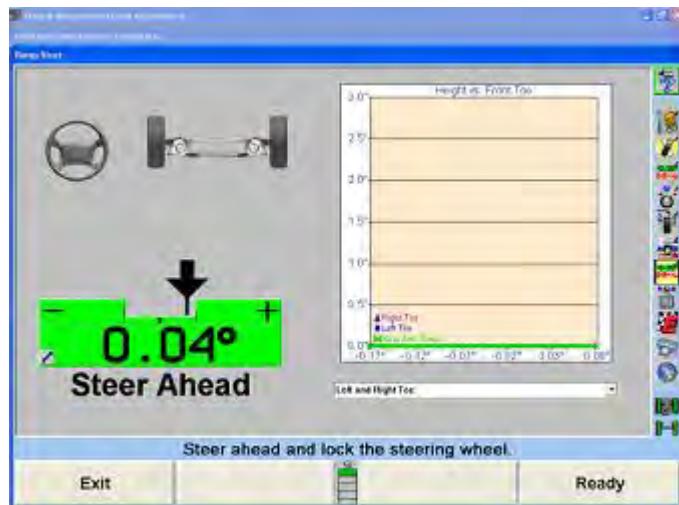
2.10.10. Bump Steer Measurement Overview

Bump Steer measures the amount of toe change caused by the steering mechanism (linkage and/or rack and pinion) not remaining parallel to the road surface. This is most notable in toe changes caused by dips or bumps in the road.

From the "Vehicle Measurements and Adjustments" screen, press "Make Additional Measurements" and the "Additional Measurement Procedures" pop-up screen will appear as shown below. Press \uparrow or \downarrow to select "Bump Steer" and press "OK".



The initial Bump Steer measurement screen will appear. Steer the vehicle straight ahead according to the bar graph and select "Ready".



Below is a list of the Bump Steer measurement softkey functions available.

Soft Key Panel			
Exit	Down	Up	Snapshot Values
Restart Procedure	Undo last Snapshot	Save Before Measurements	Hide "Before" Measurements
Print	Clear current values		
Save Values	Load saved values	Load for comparison	Copy Chart to clipboard
Show File Information	Show Comparison File Info		Help

Select "Up" or "Down" when raising or lowering the vehicle on the rack. Height will be illustrated in .5 increments. The bar graphs are live and will reflect any changes in alignment angles. The drop-down menu offers a list of different angle views.

"Snapshot Values" will take an immediate image of the incremental measurements. "Undo Last Snapshot" will remove the previous incremental image snapshot.

"Save Before Measurements" will save the current collective bump steer measurements as before measurements, indicating the initial status of the vehicle. "Hide Before Measurements" will hide the before measurements from the screen. Select "Clear Current Values" to remove the values completely.

Select "Save Values" to save the measurements to USB drive. "Load Saved Values" will retrieve measurements from USB drive. "Load for Comparison" downloads the measurements to the screen indicated by a dotted line for comparison to current live readings.

"Copy Chart to Clipboard" saves the current visible chart to the Windows® clipboard. Run the WordPad program and

select paste to transfer the chart as an image to a WordPad document.

"Show File Information" displays the specifics of the current measurements in tabulated text format. "Show Comparison File Info" displays the same information for the loaded comparison file.

Select "Print" to print all the measurements charts.

2.10.11. Bump Steer Measurement Using Live Ride Height Targets Overview

Bump Steer measures the amount of toe change caused by the steering mechanism (linkage and/or rack and pinion) not remaining parallel to the road surface. This is most notable in toe changes caused by dips or bumps in the road.

From the "Vehicle Measurements and Adjustments" screen, press "Make Additional Measurements" and the "Additional Measurement Procedures" pop-up screen will appear as shown below. Press \uparrow or \downarrow to select "Bump Steer" and press "OK".



The initial Bump Steer measurement screen will appear. Mount the live ride height Targets®, steer the vehicle straight ahead according to the bar graph and select "Ready".



Below is a list of the Bump Steer measurement softkey functions available.

Softkey Name	Continue	Show Bar Graphs	
Restart Procedure	Undo last Snapshot		Live Ride Height
Print	Clear current values	Save Before Measurements	Hide "Before" Measurements
Save Values	Load saved values	Load for comparison	Copy Chart to clipboard
Show File Information	Show Comparison File Info	Cancel	Help

The bar graphs are live and will reflect any changes in alignment angles. The drop-down menu offers a list of different angle views.

"Save Before Measurements" will save the current collective bump steer measurements as before measurements, indicating the initial status of the vehicle. "Hide Before Measurements" will hide the before measurements from the screen. Select "Clear Current Values" to remove the values completely.

Select "Save Values" to save the measurements to a hard drive or USB drive. "Load Saved Values" will retrieve measurements. "Load for Comparison" downloads the measurements to the screen indicated by a dotted line for comparison to current live readings.

"Copy Chart to Clipboard" saves the current visible chart to the Windows® clipboard. Run the WordPad program and select paste to transfer the chart as an image to a WordPad document.

"Show File Information" displays the specifics of the current measurements in tabulated text format. "Show Comparison File Info" displays the same information for the loaded comparison file.

Select "Print" to print all the measurements charts.

Measuring Bump Steer



NOTICE

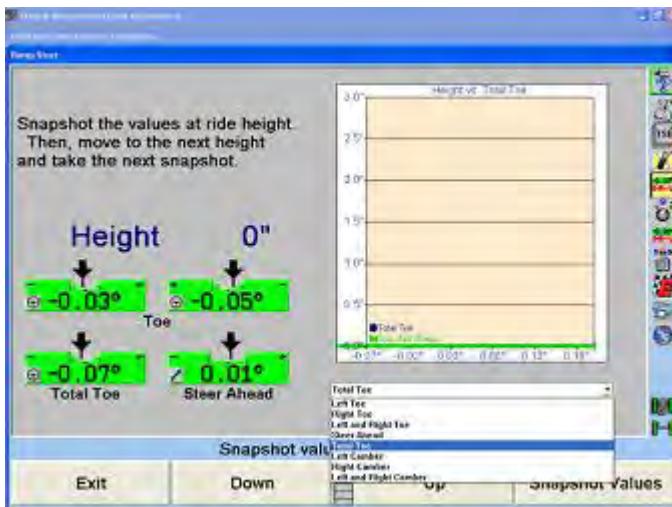
SoundGuide® should be turned on when measuring Bump Steer with Live Ride Height Targets®.

Follow the instructions on the screen. WinAlign® will take a snapshot at ride height.

Raise the vehicle in small increments and pause (5-10 seconds) between each raise. WinAlign® will take a snapshot after the vehicle is stable after each movement. If SoundGuide is turned on, a tone will confirm the snapshot has been taken. Snapshots can be taken as often as desired.

Raise the vehicle at least three inches to measure incremental changes. Use the drop-down menu to select different angle views. Using the mouse to select various snapshots will produce a VirtualView image of the front wheels.

Click and hold the left mouse button and move the mouse around the bar graph to change the VirtualView image displayed. This will also break the chart up into three columns representing the left side of the vehicle, a center view, and a right side view. Holding the mouse over a measurement line on the chart will display the exact measurements.



After lifting the vehicle to a desired height, lower the vehicle to ride height. At ride height connect the Bump Steer Winch. Refer to "Installation and Operation Instructions for Bump Steer Winch Kit, 20-2011-1," [Form 5347-T](#).

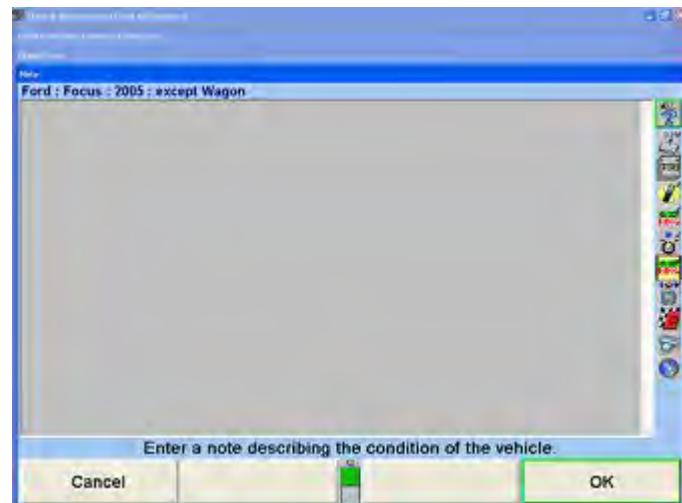
Using the winch, lower the vehicle below ride height, continuing to take snapshots at various increments.



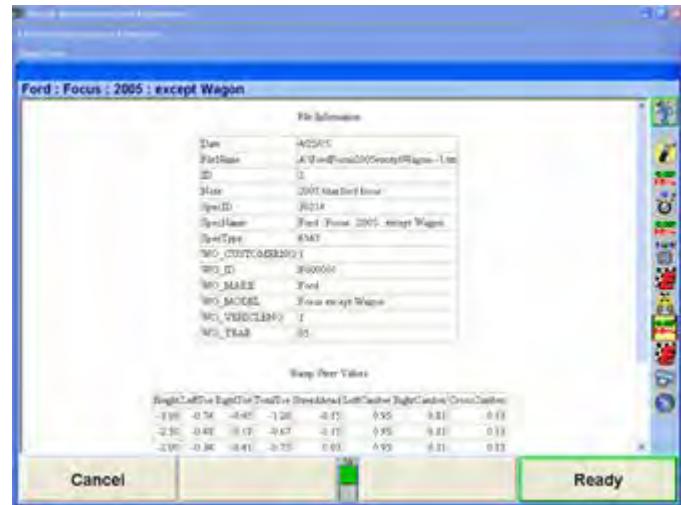
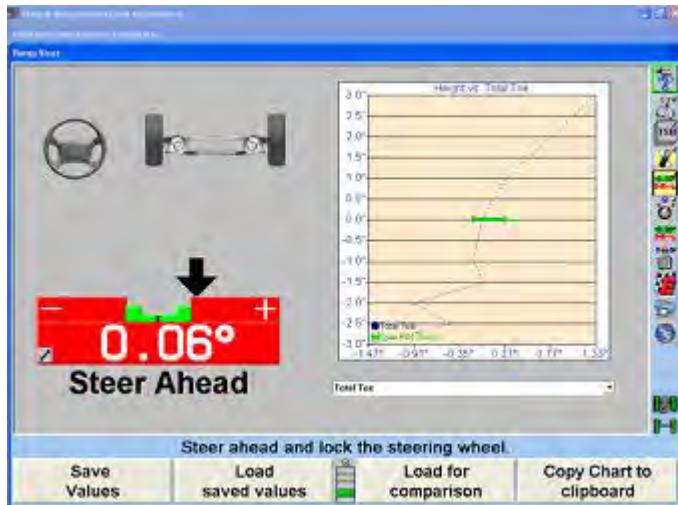
NOTICE

The tires should not be raised off the turnplates and the vehicle should not be lowered onto the strikeout bumpers.

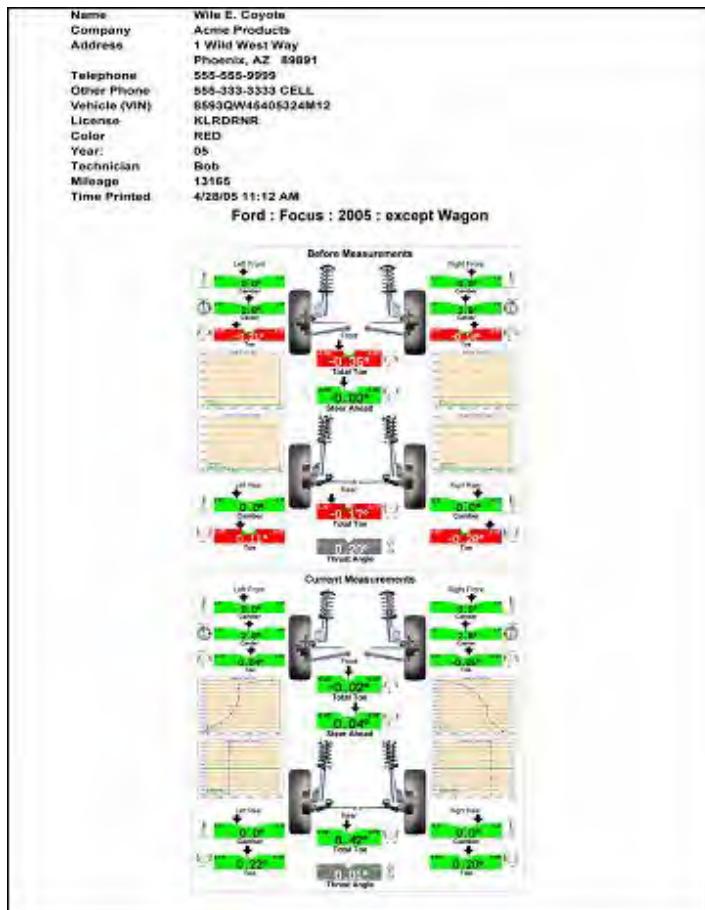
Once all measurements have been captured, select "Save Values" to store measurements to the hard drive or USB drive. These measurements can be recalled at any time. A note can be stored with the readings. Enter any specific text necessary to be stored with the measurements and select "OK". Insert a USB drive and select "Save". A custom name can be entered, otherwise the measurements will be saved under the specs name (i.e. FordFocus2005exceptWagon.txt).



Saved results can later be uploaded by selecting "Load for Comparison". When the softkey is selected, choose the location on the PC (or USB drive) where the .txt resides. Select the file and click "Open". The image of the saved results will display as a dotted line.



Selecting "Print" while on the chart screen will offer the option of printing "Before" or "Current" measurements or both together in chart form.



Select "Show File Information" or "Show Comparison File Info" to view table formatted text of the measurements.

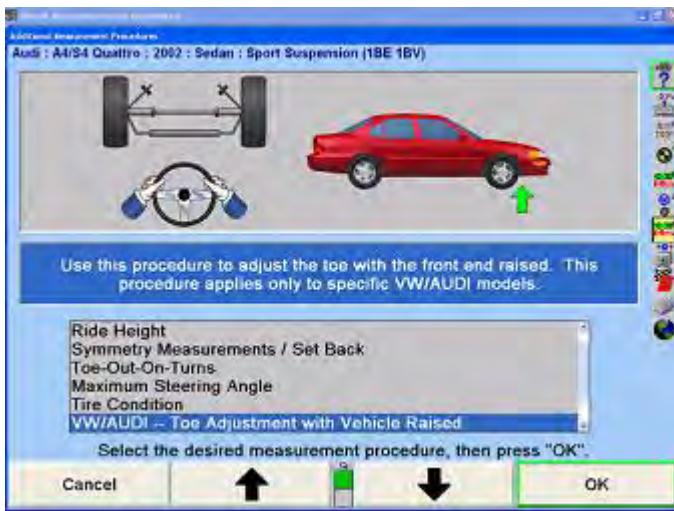
These files can also be printed and will include all readings and customer information, if entered.



Select "Exit" when all measurements have been completed and reviewed.

2.10.12. Toe Raised Procedures

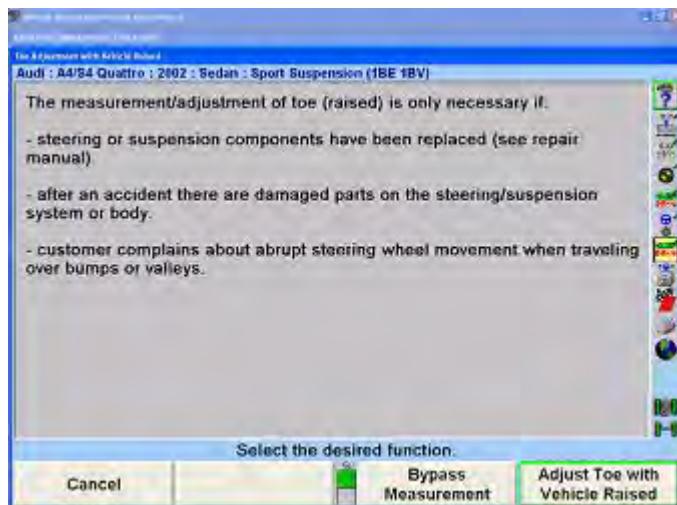
The Toe Raised Procedure is an adjustment that is required for some specific VW/AUDI models. If one of these models is recalled from the specification database, the Toe Raised Procedure will be automatically entered during the alignment procedure. If the indicated special tools are not available, this measurement and adjustment cannot be made. A flow chart of the Toe Raised Procedure is added to the end of this section for reference. From the "Vehicle Measurements and Adjustments" screen, press "Make Additional Measurements" and the "Additional Measurement Procedures" pop-up screen will appear as shown below.



Press ↑ or ↓ to select "VW/AUDI - Toe Adjustment with Vehicle Raised" and press "OK".

At the "Toe Adjustment with Vehicle Raised" screen will be several messages why a vehicle may need a Toe-Adjustment with vehicle Raised. Such conditions as:

- Steering or suspension components have been replaced.
- There are damaged parts on the steering/suspension system or body.
- Customer complains about abrupt steering wheel movement when traveling over bumps or valleys.



Selecting "Adjust Toe with Vehicle Raised" will display the following screen. The screen will show a picture of the VAG extender or adaptor. This assembly will vary according to the specification (A4 A6, A8 or Passat Sport) of the vehicle. Follow the instructions on the screen.

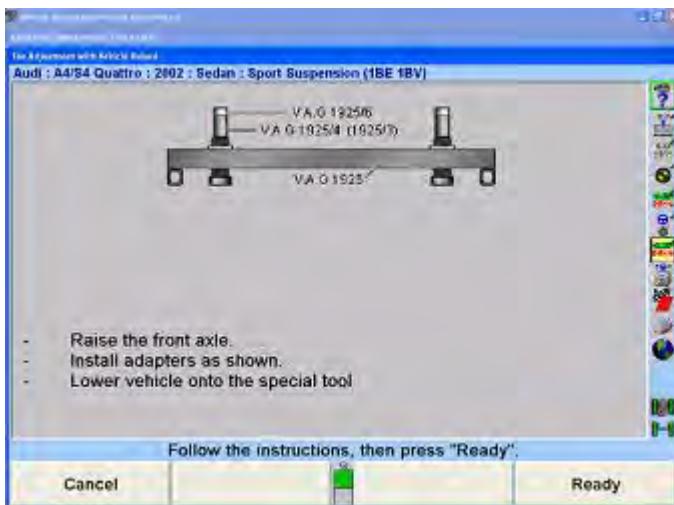
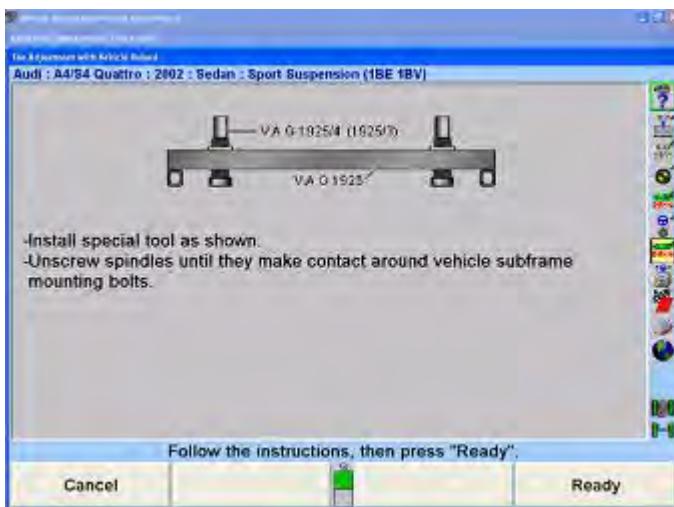


NOTICE

When using the special tool with extenders, make sure of good contact around subframe mounting points for safety and to prevent damage to undercarriage or suspension system.

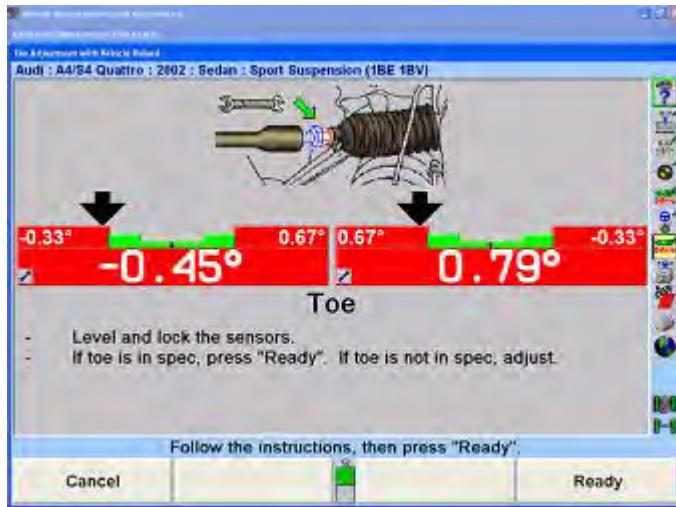
Install special tool as shown.

Unscrew spindles until they make contact around vehicle subframe mounting bolts.



Press "Ready" and the following screen will appear. The screen will present an illustration of the proper place of adjustment and two adjustment bars (left and right). Proceed with the following instructions. Level and lock the sensors.

When toe is within specifications, press "Ready".



Press "Ready" and the screen will display the special tool assembly for Toe Raised Vehicles with the following instructions. Raise the front axle. Pull up cylinder, insert and secure pin as shown.

Lower vehicle onto the special tool. There are several extenders and adaptors that are used with the VAG special tool. The appropriate extender or adaptor will be indicated in accordance with the vehicles specifications.

Extenders or Adaptors:

VAG 1925 = Special tool

VAG 1925/1 = A8 70mm extender

VAG 1925/2 = A8 18mm extender (used in most cases)

VAG 1925/3 = A4 105mm extender

VAG 1925/4 = A4 85mm extender (used in most cases)

VAG 1925/5 = A8 33mm adaptor (used for sport version)

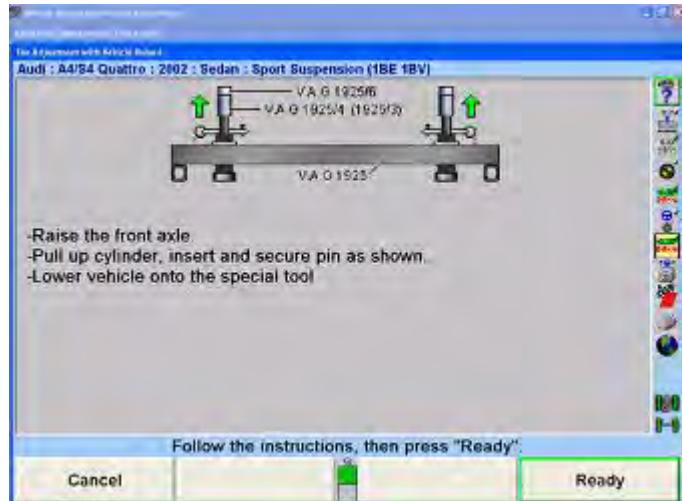
VAG 1925/6 = A4 22mm adaptor (used for sport version)



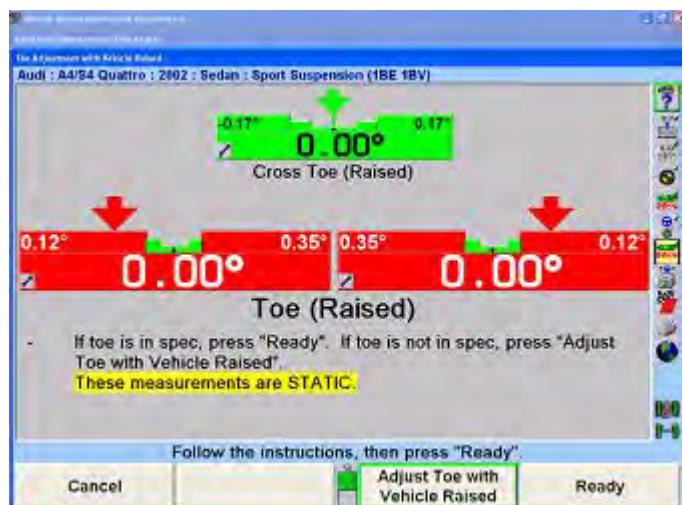
NOTICE

Using the pins to extend the cylinder upward inside the tool will allow the vehicle to rest at the correct height for raised toe measurements. The wheels themselves may or may not be resting partially on the turnplates.

Lower vehicle onto the special tool.



Pressing "Ready" will display the "Toe Adjustment with Vehicle Raised" screen shown below. This screen is not an active screen, as the warning message in yellow will show.

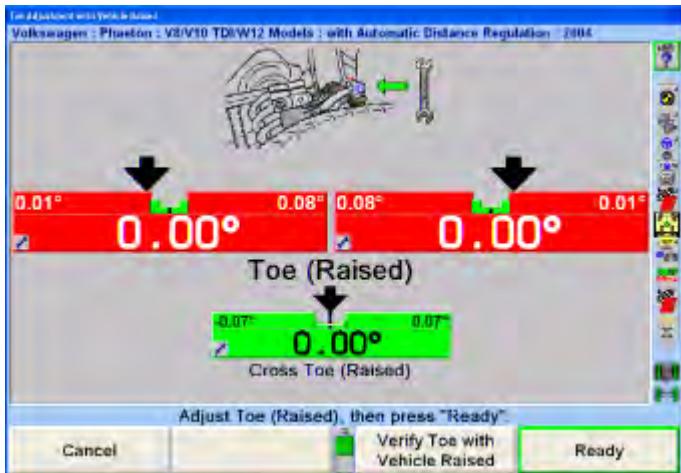


Pressing "Adjust Toe with Vehicle Raised" will move the user to an active (adjustable) screen. Continue to adjust the vehicle to within specification.

Press "Ready" and the screen will display the following instructions.

Raise the front axle.

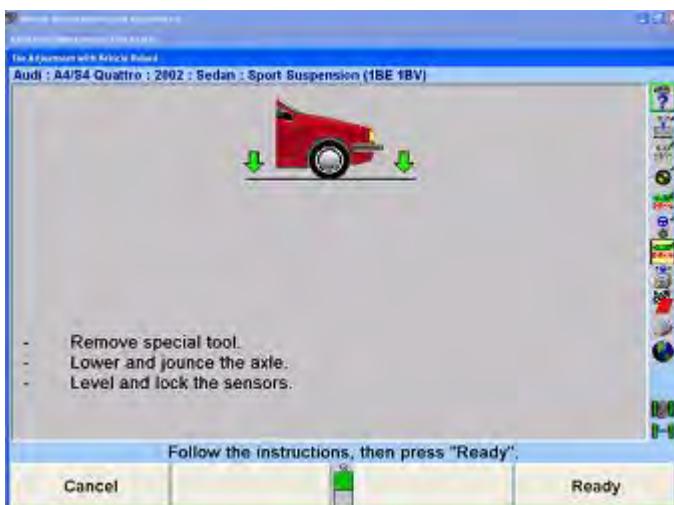
Pull up cylinder, insert and secure pin as shown.



Pressing "Ready" will display the screen below and the following instructions.

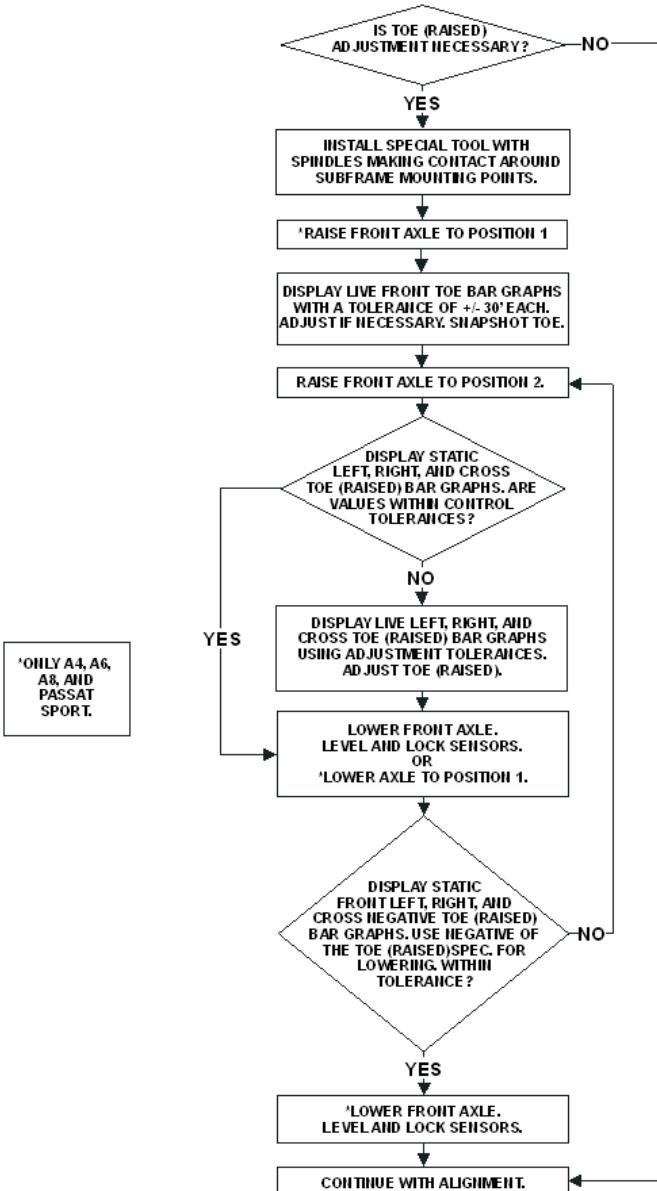
Lower the vehicle and jounce the axle.

Level and lock the sensors.



Pressing "Ready" will display the adjustments made. If adjustments are not within specification (negative or positive), move toe within specifications by repeating the procedures again through Adjust Toe with Vehicle Raised until vehicle acquires the required specification. The results of the adjustments can be viewed on the measurement screen or the printout.

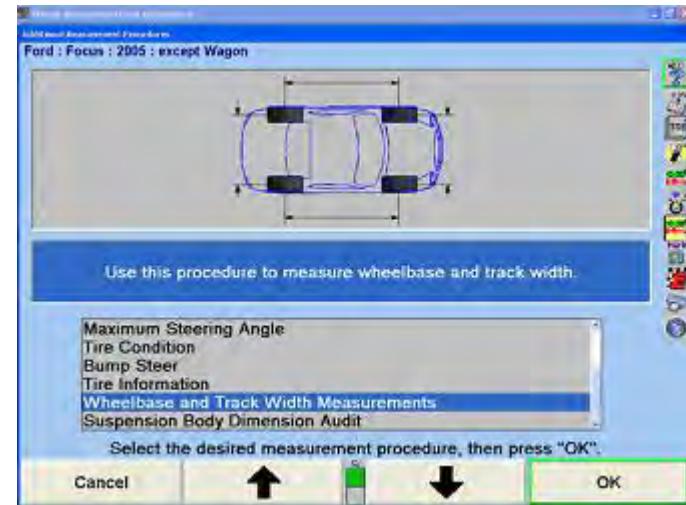
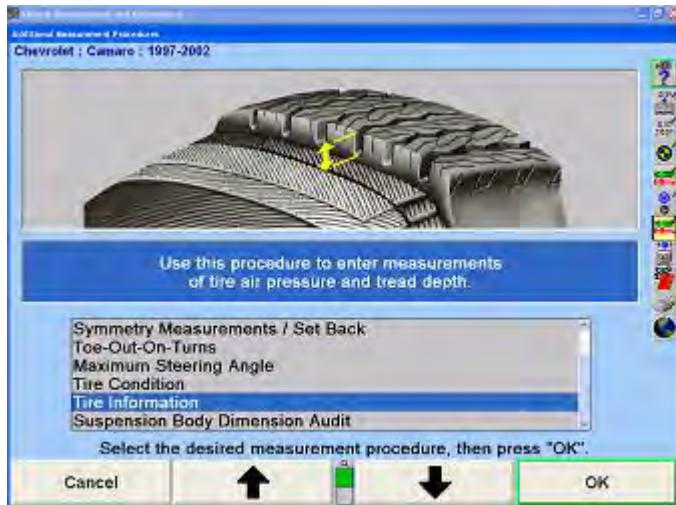
2.10.13. VAG Flowchart



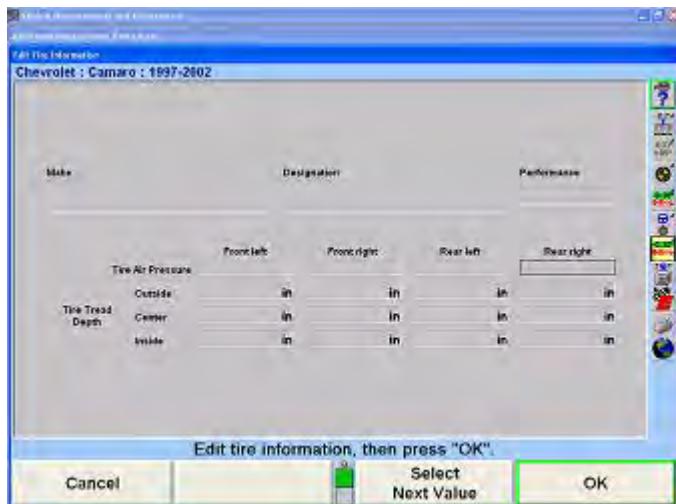
2.10.14. Tire Information

Tire information entered in the "Edit Tire Information" pop-up screen will appear on the printout summary.

From the "Vehicle Measurements and Adjustments" screen, press "Make Additional Measurements" and the "Additional Measurement Procedures" pop-up screen will appear as shown below.



Press ↑ or ↓ to select Tire Information and press "OK". The "Edit Tire Information" pop-up screen will appear as shown below.



Use the keyboard to enter the appropriate data into the "Edit Tire Information" screen. This information will appear on the printout summary.

After the data has been entered, press "OK" to continue.

2.10.15. Wheelbase and Track Width Measurements

Wheelbase and track width measurements can be used to measure the wheelbase and track width of a vehicle.

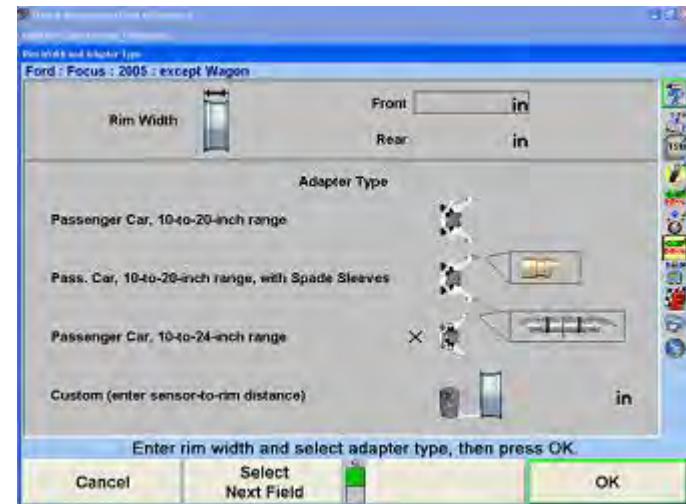
From the "Make Additional Measurements" pop-up screen, press ↑ or ↓ to highlight "Wheelbase and Track Width Measurements".

Select "OK".

The "Rim Width and Adaptor Type" pop-up screen will appear.

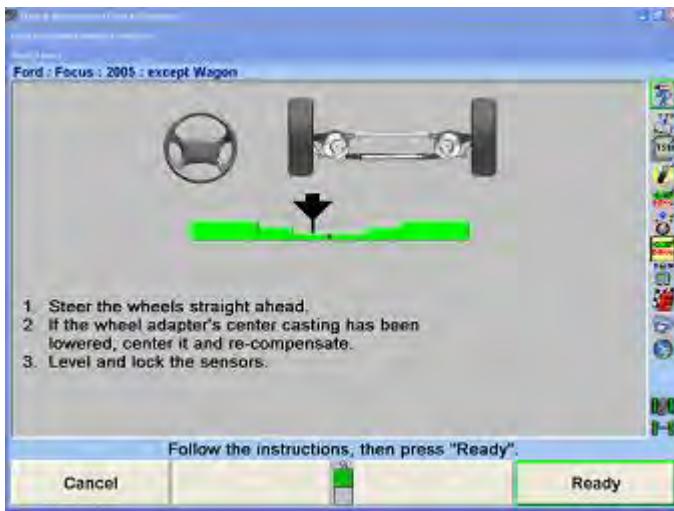
The front and rear rim widths should be measured with a caliper and entered into the rim width data boxes. If the rim width data is left blank, the track width will be an approximate measurement taken between the outside edges of the rims.

Select the adaptor type for the sensors being used.



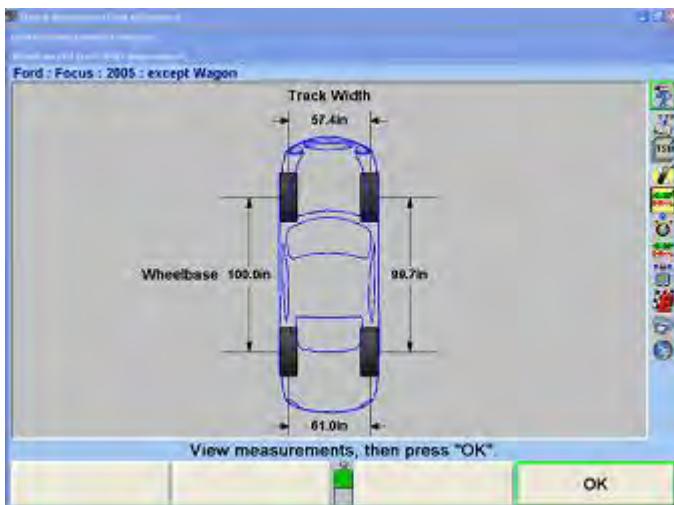
Select "OK".

When the "Steer Ahead pop-up" screen appears, steer the wheels as directed.



Select "Ready".

The "Wheelbase and Track Width Measurements" pop-up screen will appear, showing the wheelbase and track width of the vehicle.



2.10.16. SBDA - Suspension Body Dimension Audit .

Suspension Body Dimension Audit (SBDA) is available only with conventional sensors equipped with the Ride Height option and body offset gauge or with DSP600 or HawkEye Targets® with live Ride Height Targets®.



NOTICE

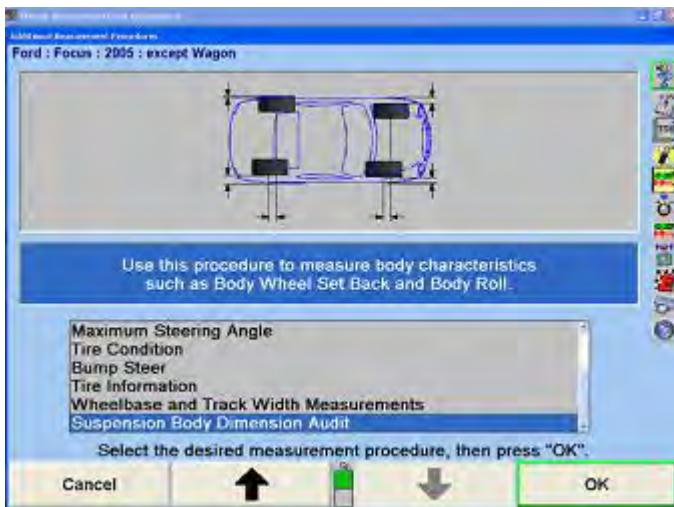
Improper steer-ahead, large values of runout or large values of toe can adversely affect SBDA measurements.

SBDA is a quick method of screening a vehicle to determine if it can be aligned before starting the alignment.

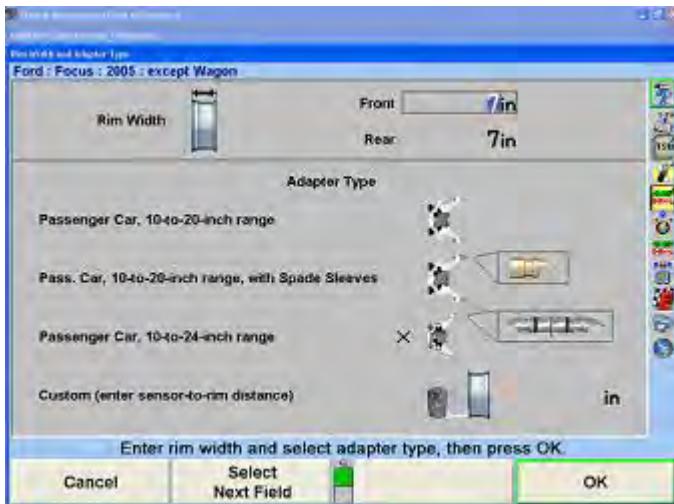
SBDA can also be used as a quick inspection method to detect frame damage of vehicles that have been in minor collisions and will help the technician to determine that an alignment would not bring the vehicle within specifications.

Select "Make Additional Measurements" from the "Vehicle Measurements and Adjustments" primary screen.

From the "Additional Measurement Procedures" pop-up screen, press ↑ or ↓ to highlight "Suspension Body Dimension Audit".



Select "OK". The "Rim Width and Adaptor Type" pop-up screen will appear.

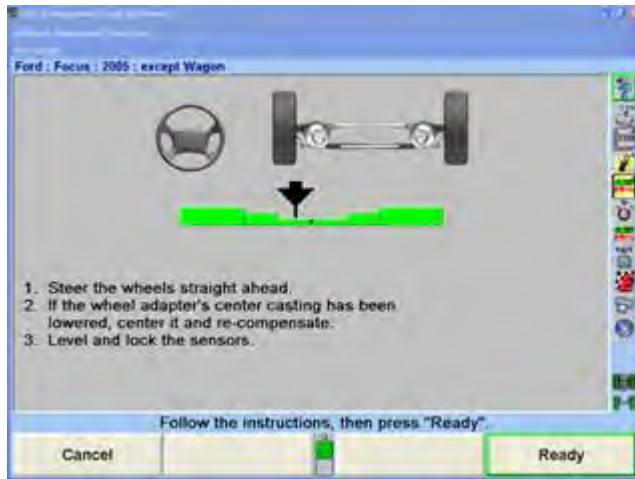


The front and rear rim widths should be measured with a caliper and entered into the rim width data boxes. If the rim width data is left blank, an alternate measurement called Track Width (Outside Rim) measured at the outside edges of the rims will be taken instead of Track Width.

Select the adaptor type for the sensors being used.

Select "OK".

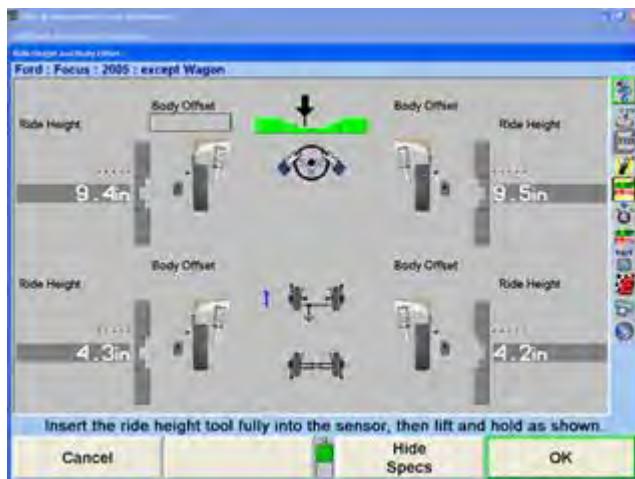
When the "Steer Ahead" pop-up screen appears, steer the wheels as directed.



Select "Ready".

Using Conventional Sensors with Ride Height Option and Body Offset Gauge

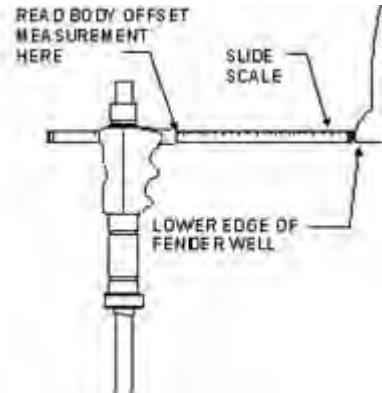
Enter the ride height dimensions using the ride height tool. Refer to "[Measuring Ride Height using the Ride Height Tool \[84\]](#)".



After measuring ride height at a wheel, lower the ride height tool slightly, pull the Body Offset Gauge (slide scale) of the tool back slightly, then raise and extend the Body Offset Gauge so that it is making contact with the lower outside edge of the fender well.

Enter the body offset measurements manually into the body offset data boxes. Repeat this step for each wheel. The preferred measurement procedure is to measure both wheels of one axle before proceeding to the next axle.

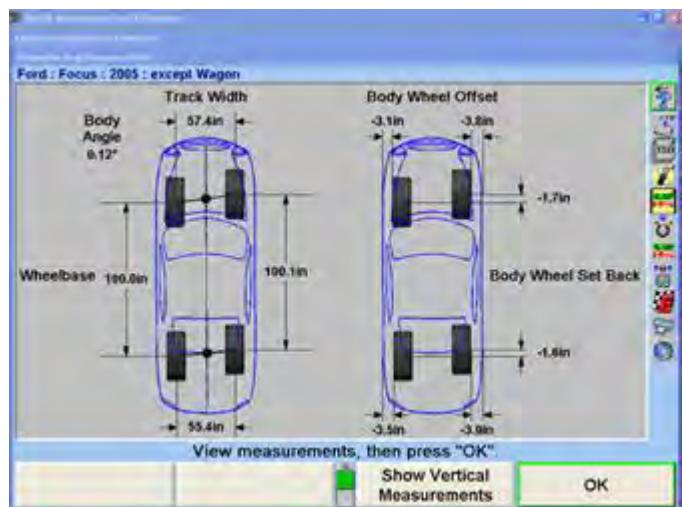
Care should be used to take the body offset measurements with the Body Offset Gauge perpendicular to the body and at the same contact point on the body for both sides of the axle.



Select "OK".

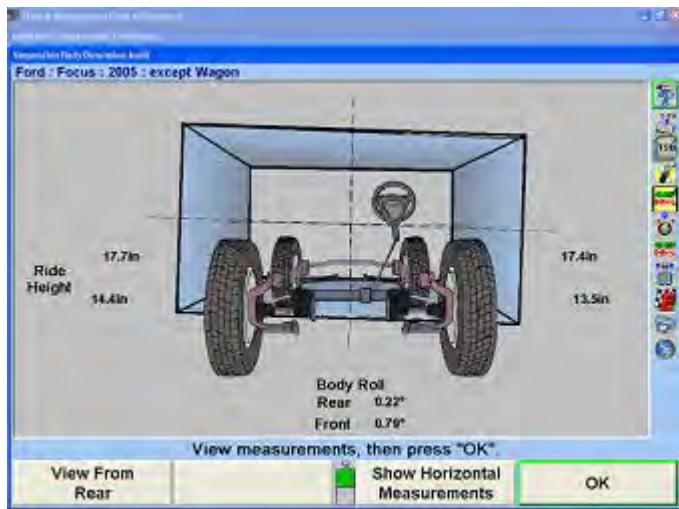
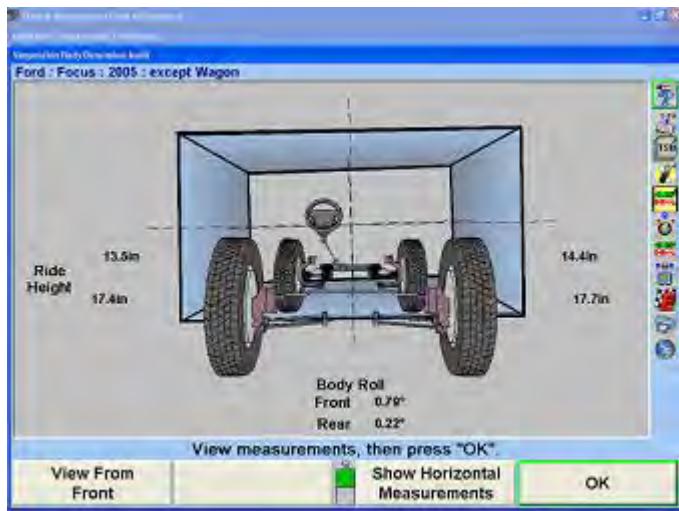
The "Suspension Body Dimension Audit" pop-up screen will appear with the wheelbase, track width, and body angles of the vehicle and on the right shows the body wheel offset and body wheel set back of the vehicle. The positions of the wheels and the body angle are exaggerated for clarity.

Selecting "Show Vertical Measurements" will present ride height and body roll measurements with a graphical depiction of the body that may be viewed from the front and the rear axle. The amount of roll is greatly exaggerated for clarity.



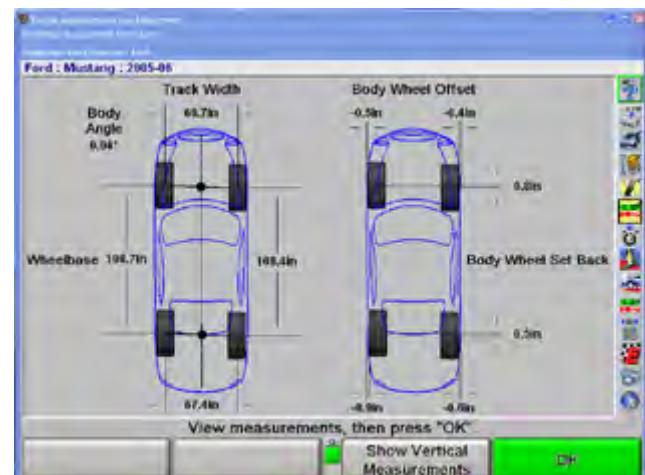
NOTICE

All graphical measurement depictions are greatly exaggerated for clarity.



The “Suspension Body Dimension Audit” pop-up screen will appear with the wheelbase, track width, and body angles of the vehicle and on the right shows the body wheel offset and body wheel set back of the vehicle. The positions of the wheels and the body angle are exaggerated for clarity.

Selecting “Show Vertical Measurements” will present ride height and body roll measurements with a graphical depiction of the body that may be viewed from the front and the rear axle. The amount of roll is greatly exaggerated for clarity.



NOTICE

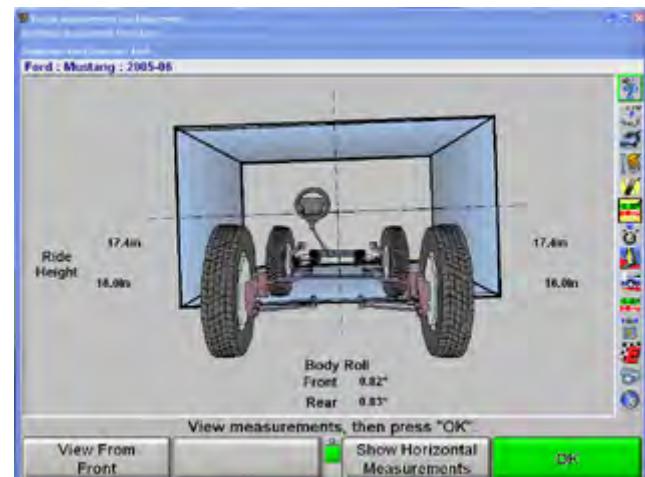
All graphical measurement depictions are greatly exaggerated for clarity.

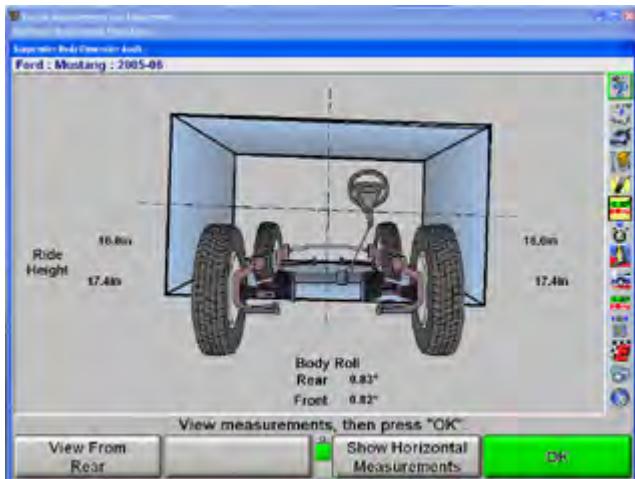
Using DSP600 or HawkEye Targets with Live Ride Height Targets

Mount the Live Ride Height Targets® on the vehicle. Refer to [“Installing the Ride Height Targets \[85\]®,”](#) for detailed instructions.



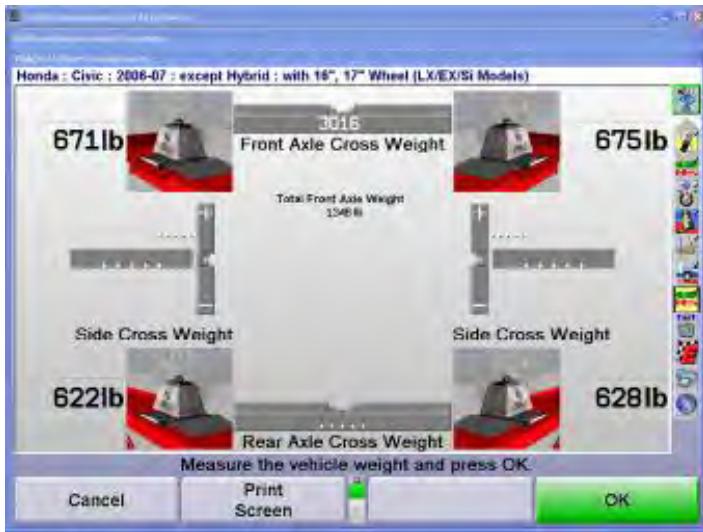
After installing the Live Ride Height Targets®, the measurements will be shown. Select “OK”.





The WinAlign® program will remove all text overlays for a clearer view of the vehicles image and illustration.

Pressing "Change Text Color" gives the option to view the callout text in a different color. If it is found that the text is difficult to read because of the image in the background, it is possible to change the color of the text for easier readability. The optional text colors are green (default), red, dark blue, yellow, light blue, and purple.



NOTICE

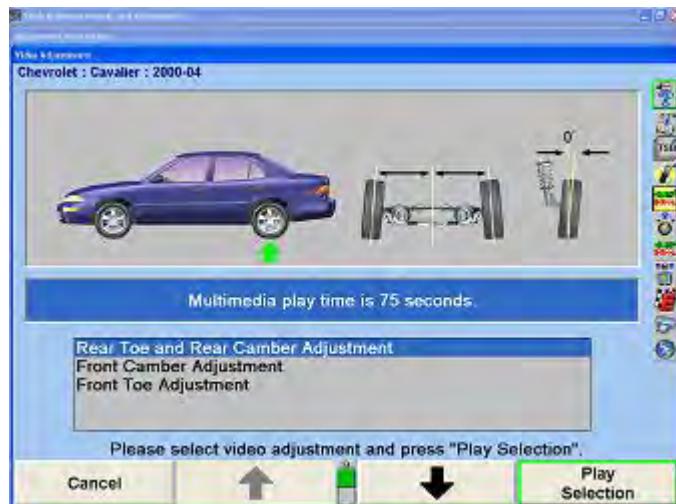
Printouts of the photographic images and illustrations are useful only if using a color printer.

Press "OK" after viewing illustrations. The screen will return to the primary screen where Illustrate Adjustments was pressed.

Optional multimedia video instructions provide a live audio-visual demonstration of adjustments. To view video illustrations:

Press "Illustrate Adjustments" on the "Vehicle Specifications" primary screen or the "Vehicle Measurements and Adjustments" primary screen. The screen will change to show an adjustment illustration for the vehicle.

Press "Video Adjustments". The "Video Adjustments" pop-up screen will appear listing various videos available.



Press ↑ or ↓ to highlight the desired video, and then press "Play Selection".

Pressing [■] will pause the video, and [▶] will restart the video after it has been paused. Pressing [□] will return you to the "Video Adjustments" menu screen.

2.11. Illustrating Vehicle Adjustments

WinAlign® software contains illustrations for adjustments. These illustrations are drawings and photographic images of the Original Equipment Manufacturers method of adjustments. They also provide instructions or information necessary to make the adjustments.

To view illustrations:

Press "Illustrate Adjustments" on the "Vehicle Specification" primary screen or the "Vehicle Measurements and Adjustments" primary screen. The screen will change to show an adjustment illustration for the vehicle. Any additional information required for the adjustment will also be shown.

Press "Next Illustration" or "Previous Illustration" to view additional illustrations. Viewing images in Illustrate Adjustments defaults with text callouts applied to the image.

To view the image without the overlay text, use the menu shift softkey, , to locate and press the "Hide Text" softkey.

After the video ends, you will be returned to the "Video Adjustments" screen.

2.12. Front Adjustments

WinAlign® specific front adjustment features include:

Vehicle-specific front shim adjustments

CAMM® Alignment Adjustment Feature - Control Arm Movement Monitor

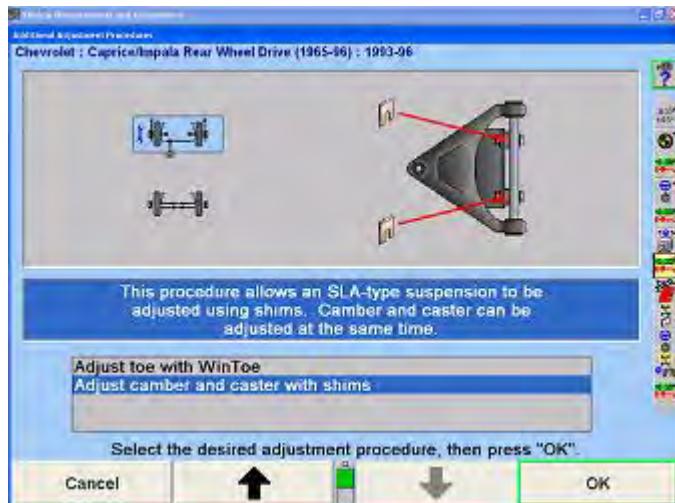
WinToe® toe adjustment feature

ABC - Automatic Bushing Calculator®

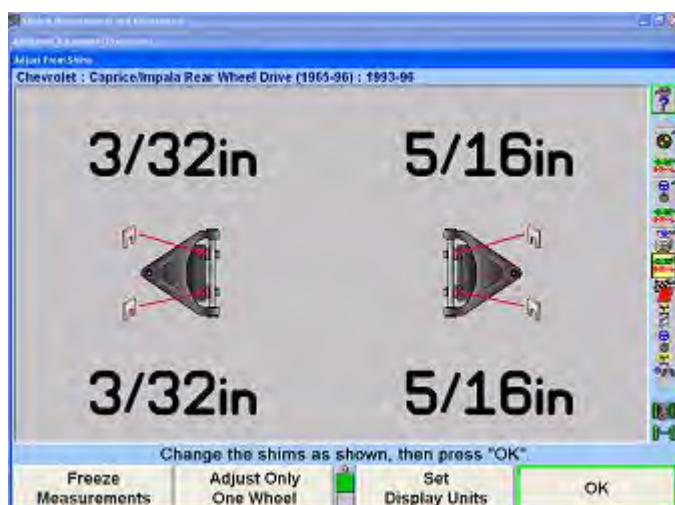
2.12.1. Front Shims

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

Press \uparrow or \downarrow to highlight "Adjust camber and caster with shims".



Press "OK". The "Adjust Front Shims" pop-up screen will appear.



Some vehicles with SLA-type (short/long arm) suspensions have shims placed between the vehicle frame and the pivot arm of the upper control arm. Placing the correct amount of shims at each pivot arm mounting point simultaneously adjusts both camber and caster of the wheel. It is difficult to compute the required shim changes, especially when the upper control arm is not symmetric. The specification database includes information that allows the system to correctly compute the shim changes required, even for non-symmetric upper control arms.



NOTICE

The caster angle is a live value that is continuously updated as changes occur to the caster angle during adjustment. At the beginning of the procedure, install brake depressor, then level and lock the sensors.

The procedure for making the shim adjustments is as follows: Measure the caster, then pop-up the "Adjust Front Shims" screen.

Steer straight ahead, install brake depressor, then level and lock the sensors.

Observe the required shim changes as shown on the screen. A negative number means that the indicated shim thickness must be removed from the corresponding position, while a positive number indicates that the shim thickness must be added.

If desired, press "Freeze Measurements". The screen then displays "Measurements are frozen!" and freezes the required shim changes. Freezing the measurements allows the sensors to be removed from the wheels while the display continues to show the shim requirements, and to unbolt the pivot arm to change the shims without losing the display or required changes. Press "Unfreeze Measurements" to return the display to normal live operation.

Press "OK" when adjustments are complete. The "Vehicle Measurements and Adjustments" primary screen will appear.

One-Sided Adjustments

Sometimes it is preferable to adjust camber and caster of only one wheel. For example: If the camber and caster of one wheel are within tolerances but not exactly on specification, it may be acceptable to leave those measurements unchanged.

If the camber and caster adjustments on one wheel do not have sufficient range to allow adjustment exactly to

specification, you may have to accept what adjustment is possible.

In such cases, it is important that the camber and caster adjustments be symmetric side-to-side. The system allows you to adjust camber and caster of one wheel to match the camber and caster measurements of the other wheel, thereby achieving symmetric measurements, even if those measurements are not on the specification.

Press "Adjust Only One Wheel". The "Snapshot One-Sided Adjustments" pop-up screen will appear, as shown below.



If you wish to adjust the left wheel and leave the right wheel unadjusted, press "Adjust Only The Left Wheel".

OR

If you wish to adjust the right wheel and leave the left wheel unadjusted, press "Adjust Only The Right Wheel".



NOTICE

You can adjust one wheel to its optimum adjustment, then press "Adjust Only One Side" to optimize the other wheel.

When the camber and caster measurements are stable on the wheel that will remain unadjusted, the system will save those measurements to be used as the Targets® for adjusting the other wheel. The "Adjust Front Shims" pop-up screen will appear.

The prompt will instruct you to change the shims only on the wheel to be adjusted. The shim changes shown for the wheel are the adjustments required to make the camber and caster of that wheel match the camber and caster of the other wheel.

To return to adjusting both wheels, press "Adjust Both Wheels".

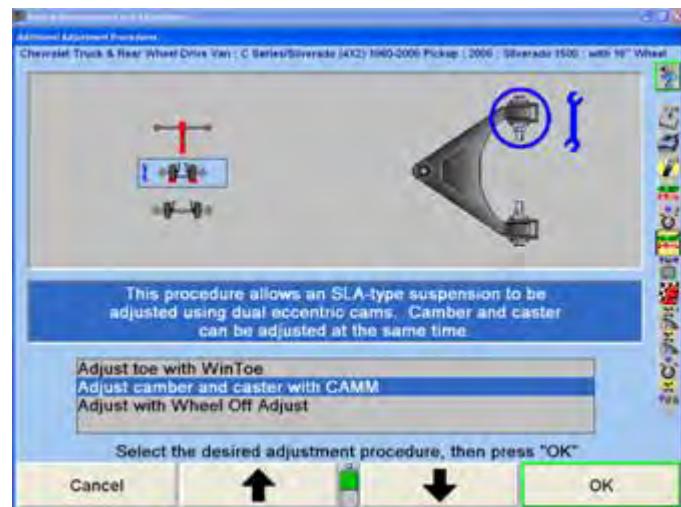


NOTICE

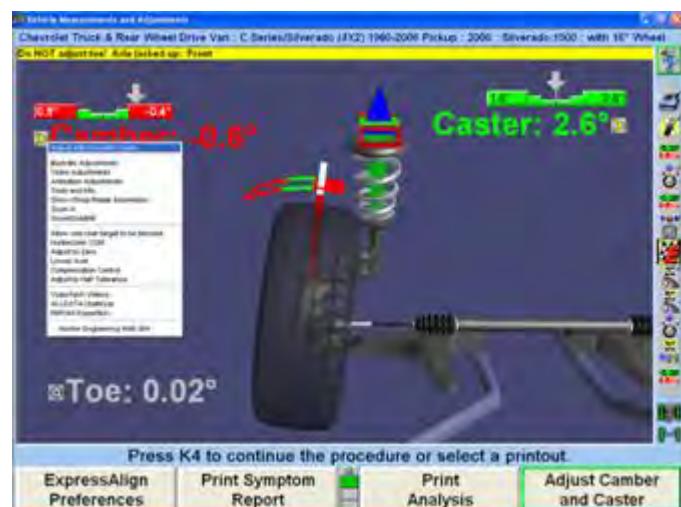
You may Freeze Measurements either before or after pressing "Adjust Only One Wheel".

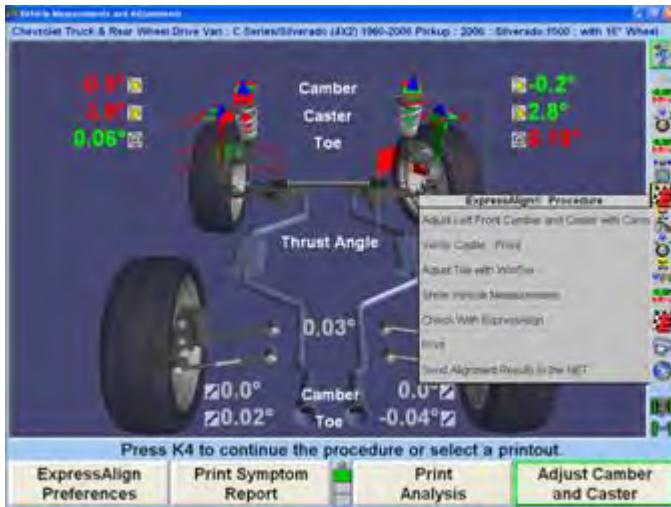
2.12.2. CAMM Alignment Adjustment Feature - Control Arm Movement Monitor for Front Cams and Slots

Press "Make Additional Adjustments" on the "Vehicle Measurements and Adjustments" primary screen. The "Additional Adjustment Procedures" pop-up screen will appear, as shown below. Press \uparrow or \downarrow to highlight the adjustment procedure for cams or slots.

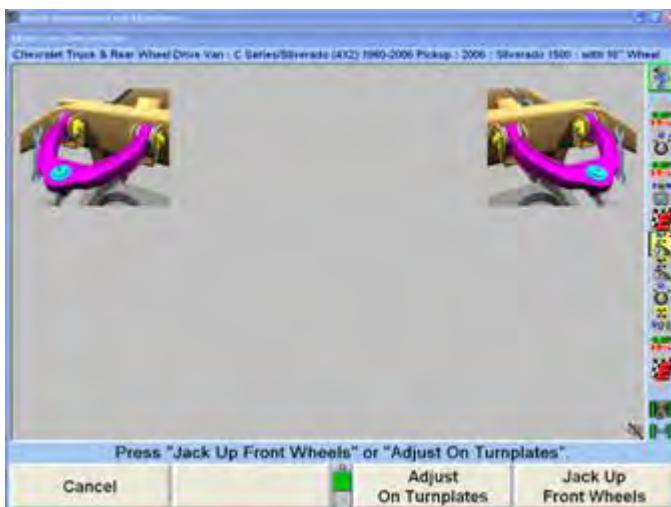


CAMM® Alignment Adjustment Feature is also available as a drop-down selection from the measurements screen, or as part of the ExpressAlign® procedure.





The "Adjust Front Cams and Slots" pop-up screen will appear, as shown below. If ExpressAlign® has been enabled the screen will appear automatically.



Press "Jack Up Front Wheels" to adjust with the wheels off the rack. The "Axe Jacking Procedure" pop-up screen will appear.

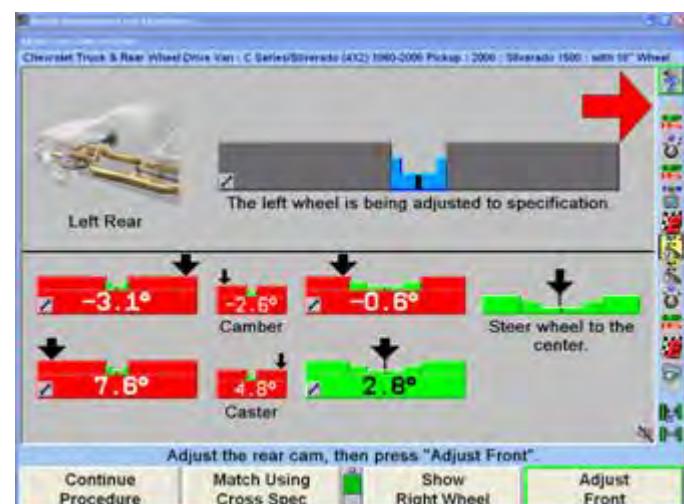
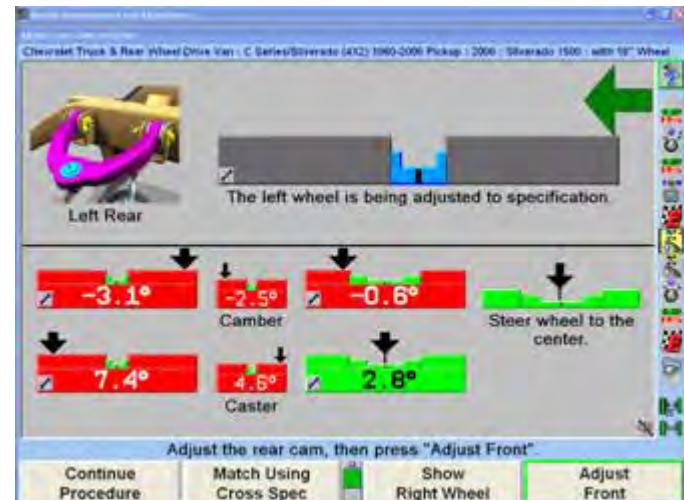
Raise the selected axle and press "Ready". The program will compensate for the difference in sensor readings caused by raising the wheels.

OR

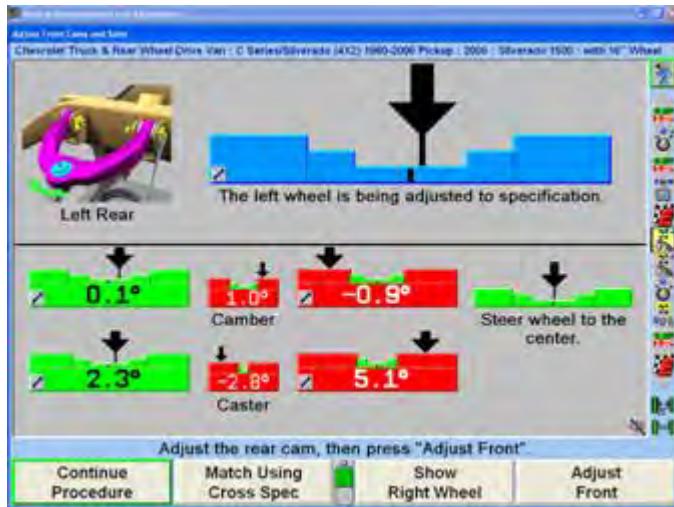
Press "Adjust On Turnplates" to make adjustments without raising the vehicle. The "Adjust Front Cams and Slots" pop-up screen will appear, as shown below. CAMM will determine the cam or slot that should be adjusted first (front or rear).

Caster and camber bar graphs can also be displayed by selecting "Show Bar Graphs". The bar graphs should be used for reference only. Actual adjustments should be made using the blue CAMM bar graphs.

When adjustments have begun, an arrow appears indicating the direction the control arm is being moved. A green arrow will point toward the center of the graph if adjustments are being made correctly, or a red arrow will appear if adjustments are moving away from the center of the graph.

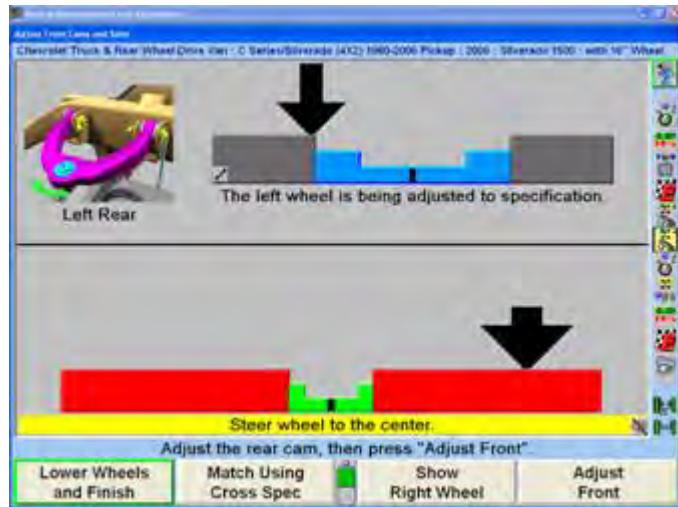


Adjust the front cam or slot until the arrow is in the center of the bar graph. As the adjustments are made the indicator will move to the center of the bar graph and the bar graph will turn from gray to blue.



In the example above the rear cam is adjusted first. When the bar graph has turned blue, tighten the cam, then select "Adjust Front" to adjust the front cam. Each time the aligner will re-analyze the changes required before switching to the other cam or slot and showing the bar graph.

Continue making adjustments as directed. When the adjustment has moved camber and caster to within specs for that particular wheel a pop-up screen notifying the technician that no more adjustments are required will appear.



Select "Match Using Cross Spec" to have CAMM add the correct amount of difference the vehicle manufacturer recommends. An example of this would be:

Caster spec left: 4.0 degrees

Caster spec right: 5.0 degrees

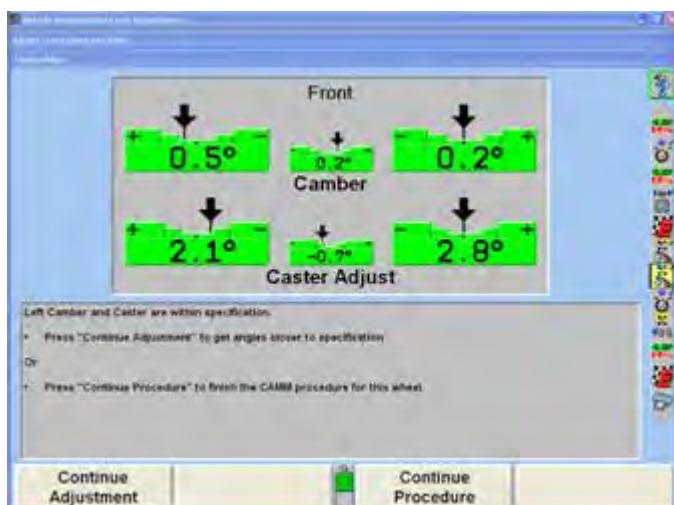
Actual Left Caster: 3.7

Actual Right Caster: 1.2

If the technician is adjusting the right side of the vehicle using Match Using Cross Spec, right caster will be adjusted to 4.7 degrees. If the left and right spec for camber or caster is different, it will add or subtract the correct amount. If there is not a difference, it will match them exactly.

Select "Lower Wheels and Finish" when all adjustments are completed.

2.12.3. WinToe® Toe Adjustment System



Select "Continue Procedure" to move on to the next step in the alignment procedure. If the other wheel still requires adjustment the program will automatically switch to that wheel. Make the adjustments to that wheel as directed above.

If at any time the steering wheel is moved away from center, a bar graph will appear with the steering wheel's current position and the note Steer wheel to the center. Correct the steering condition and continue with the procedure.



NOTICE

WinAlign® 10.0 and greater allow more steering and lift range when using WinToe®.

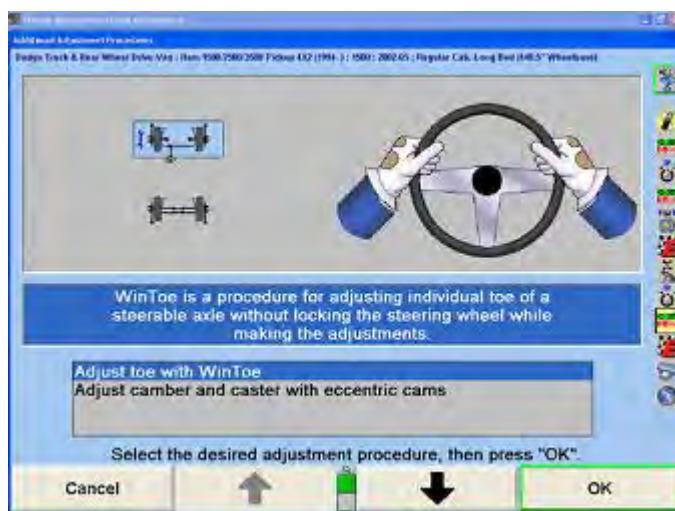
WinToe® Toe Adjustment System is a software feature that allows the adjustment of front toe on vehicles with an independent tie rod adjustment for each wheel. Using WinToe® will provide the desired toe settings for each wheel and insure the desired steering wheel position, normally without the need to readjust or touch up settings. Additionally, WinToe® eliminates the need to lock the steering wheel during toe adjustments. There are a few special cases in which a different WinToe® procedure will be used to adjust front toe:

- Vehicles with single tie rod and no adjustable draglink
- Vehicles with relay rod and adjustable draglink

To access WinToe® directly from the front bar graphs, press and hold the left mouse button on either the left or right toe bar graph, then highlight “Adjust Toe with WinToe®” from the pull-down menu and release.

OR

Press ↑ or ↓ to highlight “Adjust Toe with WinToe®” under the “Make Additional Adjustments” secondary screen. The “WinToe®” pop-up screen will appear prompting to level the steering wheel in the straight-ahead position as indicated.



For vehicles with power steering, place the transmission in park or neutral, install brake depressor, and make sure the wheels are chocked, start the engine and level the steering wheel.

Steering wheel leveling is important. While sitting in the drivers' seat, rock the steering wheel back and forth in arcs left and right from the level position. The arcing motion should start out with larger arcs and gradually become smaller arcs with the result being to have the steering wheel be precisely leveled while ensuring that the steering system is carefully positioned in the mid-point of any gear lash and power steering valve movement.

Use chalk to mark the leveled steering wheel position with the side of the steering column. This easy to see reference mark will save time in final adjustment verification.



Select “Show Toe Bar Graphs” to exit the VirtualView® WinToe®.

With the steering wheel centered, turn the engine off and exit the vehicle, being careful to not touch or bump the wheel position. IT IS NOT NECESSARY TO LOCK THE STEERING WHEEL. (Does not apply to the two special cases in which a different WinToe® procedure will be used to adjust front toe.) While being careful to not disturb the position of any wheels or steering linkage, level and lock all four wheel sensors.



NOTICE

Before locking the adjustment, lightly jounce the front end to verify the relaxed position. Lock the adjustment and lightly re-jounce the suspension to verify adjustment. As long as the bar graph remains green, with the adjustment locked, you can proceed. The value does not have to read zero. To prevent incorrect adjustments, WinToe® does not allow the operator to proceed unless the locked adjustment is green.

Follow the on-screen instructions and press “Ready”.

This will allow WinToe® to memorize each front wheels position and needed tie rod adjustments relative to the desired steering wheel position. Keep in mind, the WinToe® feature's memory will track the needed adjustments for each wheel, even if the steering moves or gets jarred during the adjustment process. WinToe® automatically compensates for any movement in the steering system and continues to accurately monitor the adjustments.

The screen will change to display a bar graph prompting to adjust the right toe.



Adjust right tie rod until toe is zero. Jounce the front axle. Readjust the right tie rod if necessary. Equalize all rotational movement in the joints by making sure that each ball and socket joint in the steering linkage can be rotated in either direction the same distance.

Lock the adjustment, then lightly jounce the front end again to verify the adjustment. As long as the bar graph remains green, with the adjustment locked, you may proceed. The value does not have to read zero, but the bar graph must be green.

NOTICE

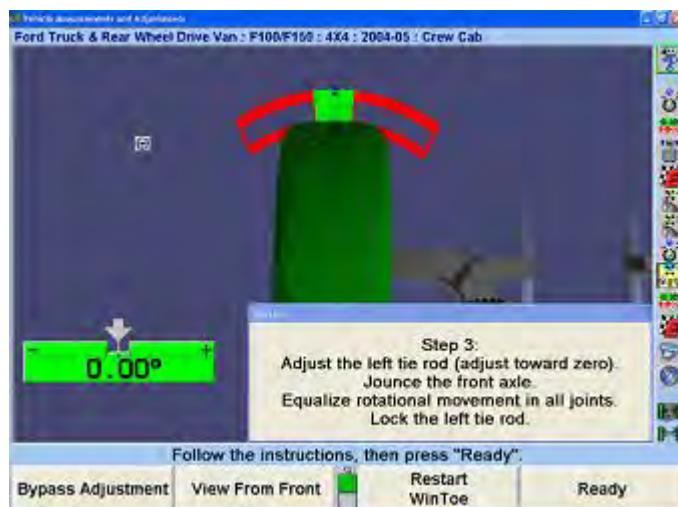
To prevent incorrect adjustments, WinToe® prevents the operator to proceed unless the locked adjustment is green.



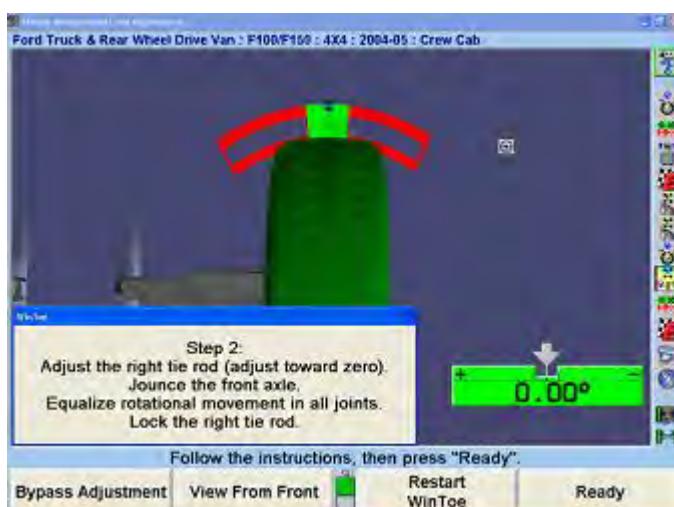
Adjust left tie rod until toe is zero. Jounce the front axle. Readjust the left tie rod if necessary.

Equalize all rotational movement in the joints.

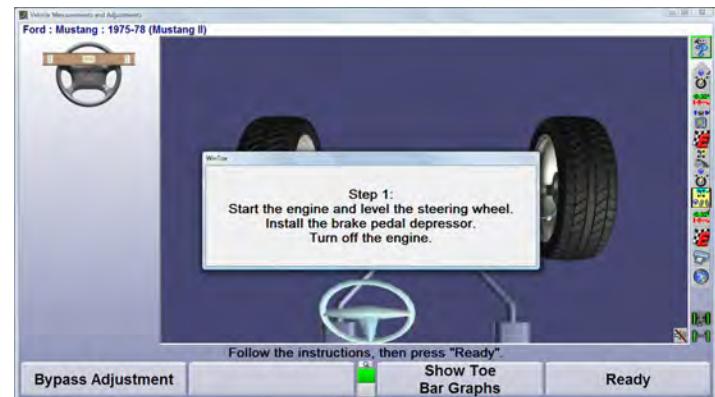
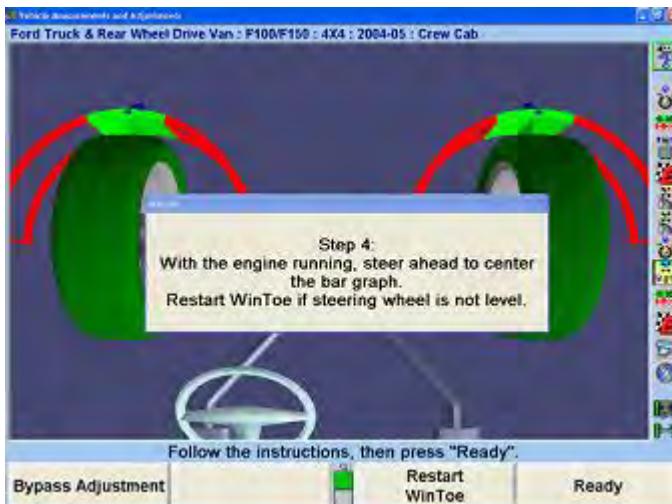
Lock the adjustment, and then lightly jounce the front end again to verify the adjustment. As long as the bar graph remains green with the adjustment locked, you may proceed. The value does not have to read zero, however, the bar graph must be green.



Press "Ready". The screen will change to display one bar graph. To verify steering wheel position, steer straight ahead. The arrow should be centered on the bar graph and the steering wheel level. Restart WinToe® if the steering wheel is not level.



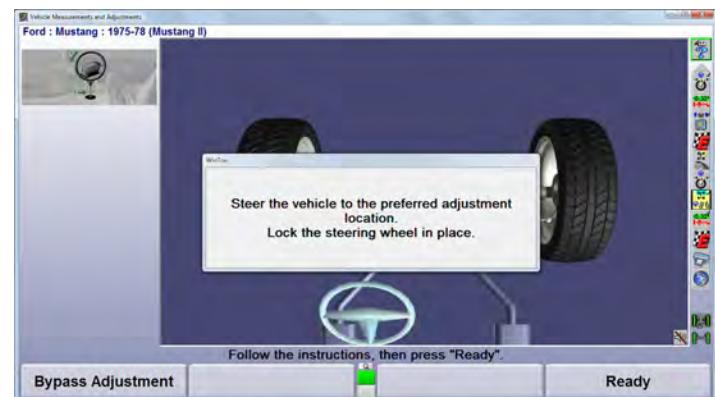
After the right side adjustment is completed and locked, pressing "Ready" will display a bar graph prompting to adjust the left toe.



From the WinToe® Step 2 screen, select "Steer Before Adjusting."



Screen will change and prompt you to steer the vehicle to the preferred adjustment location. Lock and level the steering wheel and the press "Ready."



Screen will change back to the Step 2 screen. Follow onscreen instructions and select "Ready."

WayOut WinToe Procedure

i NOTICE

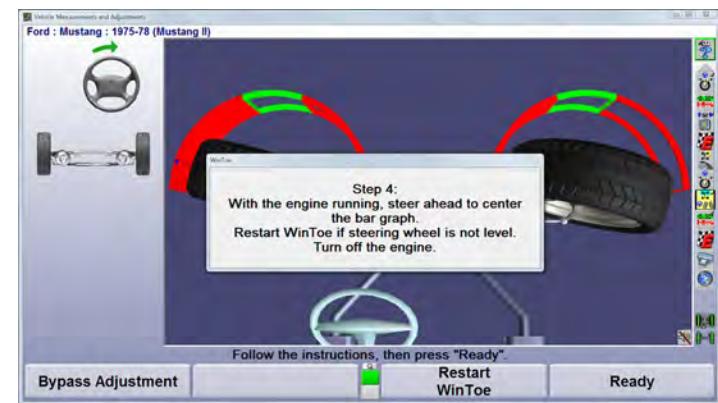
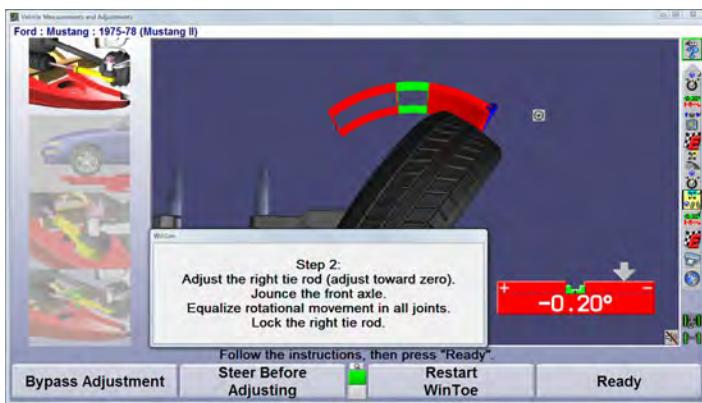
When performing the WayOut WinToe® procedure, it is important to:

Select "Steer Before Adjusting" (K2) on the second screen.

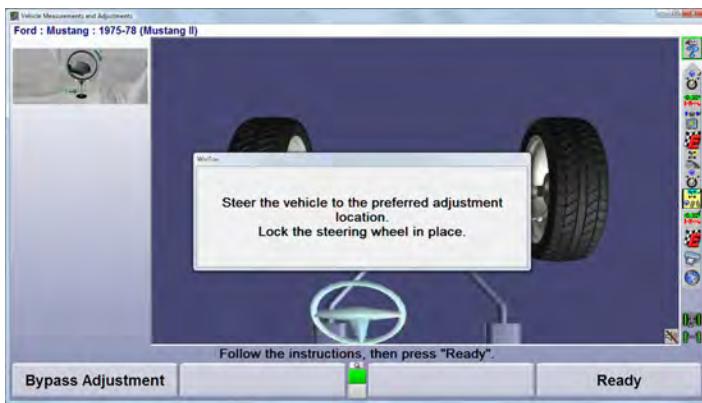
Install the steering wheel holder when instructed.

Start the WinToe® procedure.

Select "Ready."



Screen will change and prompt you to steer the vehicle to the preferred adjustment location. Lock and level the steering wheel and the press "Ready".



Screen will change to the Step 3 screen. Follow onscreen instructions and select "Ready".

2.12.4. ABC - Automatic Bushing Calculator Adjustment Feature

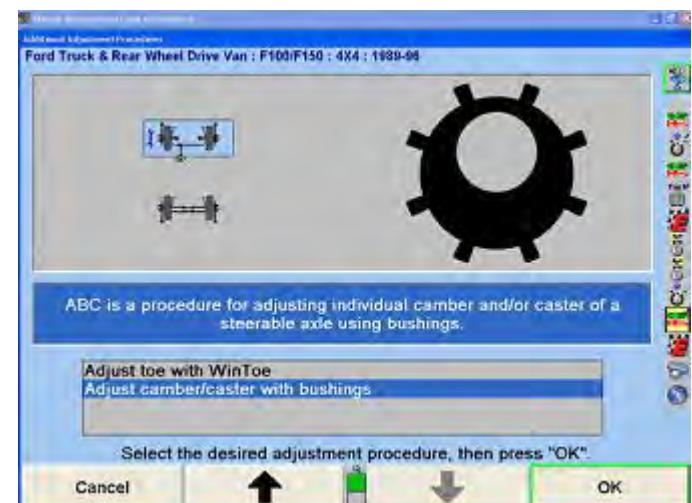
Automatic Bushing Calculator® (ABC) provides assistance in determining the correct bushing size and proper positioning for the required adjustments.



NOTICE

Do NOT remove bushings until instructed to do so. The illustrated blue arrow depicts the center of the thin wall. This is NOT the bushing crush gap.

Press "Make Additional Adjustments", on the "Vehicle Measurements and Adjustments" primary screen. The "Additional Adjustment Procedures" pop-up screen will appear. Press \uparrow or \downarrow to highlight "Adjust camber/caster with bushings".



Press "OK".

OR

Select "Adjust with Automatic Bushing Calculator" from the context sensitive menu.

In the left lower corner of each applicable bar graph, there will be a bushing icon, , to indicate that the Automatic Bushing Calculator is available.

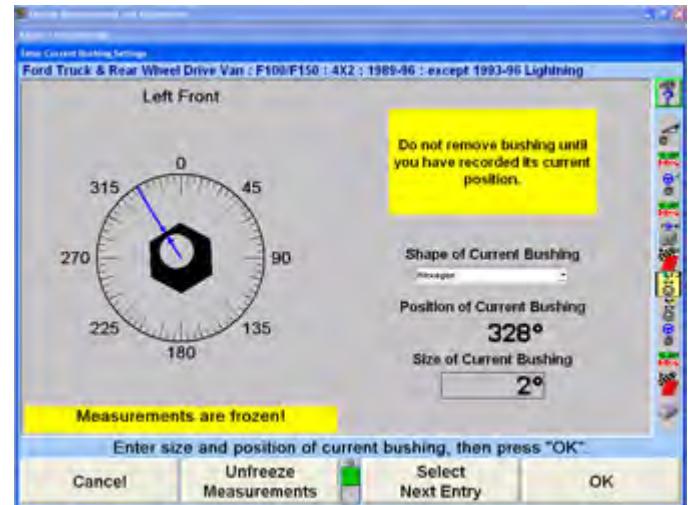


If the "Steer Ahead" pop-up screen appears, steer the wheels straight ahead.



Press "Ready". Measurements will automatically be frozen.

Do not remove the bushing.



The screen then displays "Measurements are frozen!". Freezing the measurements allows the sensors to be removed from the wheels while the display continues to show the bushing requirements. Press "Unfreeze Measurements" to return the display to normal live operation.

Identify and enter the shape of the current bushing by pressing the tab key on the keyboard and \uparrow or \downarrow to highlight the desired choice or using the mouse or lightpen.

Record the current position of the bushing into the computer.



NOTICE

The illustrated blue arrow depicts the center of the thin wall. This is NOT the bushing crush gap.

Adjust the blue arrow to the center of the thin wall on the illustrated bushing.

OR

Enter the data manually by pressing the tab key on the keyboard to highlight the "Position of Current Bushing" data box and entering the degrees using the illustrated bushing as a reference for direction.

Identify the size of the current bushing by looking at the stamped size on the side of the bushing and enter the size into the "Size of Current Bushing" data box.



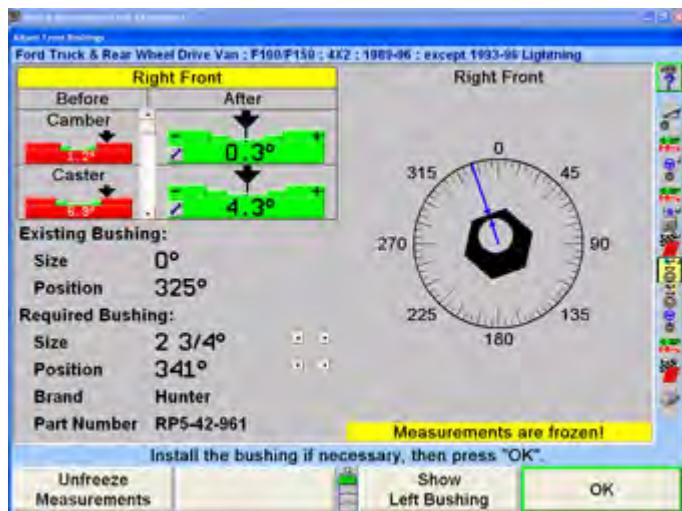
NOTICE

ABC accepts bushing size values in both decimal degrees and fractional degrees. If the bushing is stamped in degrees and minutes (example 1°30), you should convert the value to degrees before you enter it.

Degrees and Minutes	Degrees
0°15	.25°
0°30	.50°
0°45	.75°
1°00	1.00°
1°15	1.25°
1°30	1.50°
1°45	1.75°
2°00	2.00°

After you have finished entering the existing bushing information, press "OK".

The "Adjust Front Bushings" pop-up screen will appear. The screen opens showing the bushing requirements for the left wheel. Press "Show Right Bushing" to toggle to the right wheel, and then "Show Left Bushing" to toggle back.



Before removing the bushing, mark a reference line on the bushing that indicates the front orientation of the bushing in its current position. Remove the bushing.

This screen will display the existing bushing information and the required adjustment bushing information. The currently measured camber and caster are shown in the Before column at the upper left.

The After column shows the residual errors that will remain in camber and caster after installing the bushing. These

residual values are shown in bar graph form so that the quality of the adjustments can be quickly gauged.

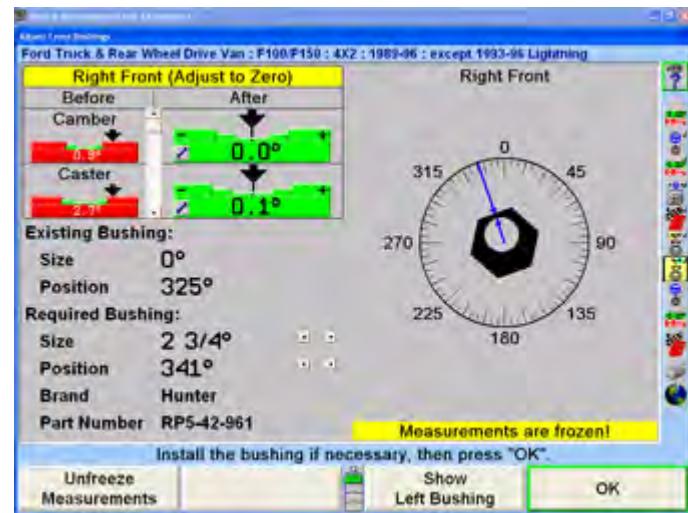
The size, installation position, brand and part number for the required bushing will be displayed in the lower left-hand corner of the screen.

The size and position of the required bushing are computed for optimum adjustment, but may be manually overridden by the technician by either selecting the adjustment arrows to the right of the numbers, or by moving the blue arrow to the new placement of the thin wall of the bushing.

Initially the computer considers both readings to have equal importance, but the scroll bar to the right of the camber and caster readings allows the technician to prioritize the need for either camber or caster adjustment as more or less important. "Improve Camber" and "Improve Caster" can also be selected to move the scroll bar. For instance, scrolling toward caster increases the importance of caster adjustment and decreases the importance of the camber adjustment. The bushing will be changed accordingly.

Selecting "Change Bushing Brand" will change the bushing manufacturer to the next manufacturer available.

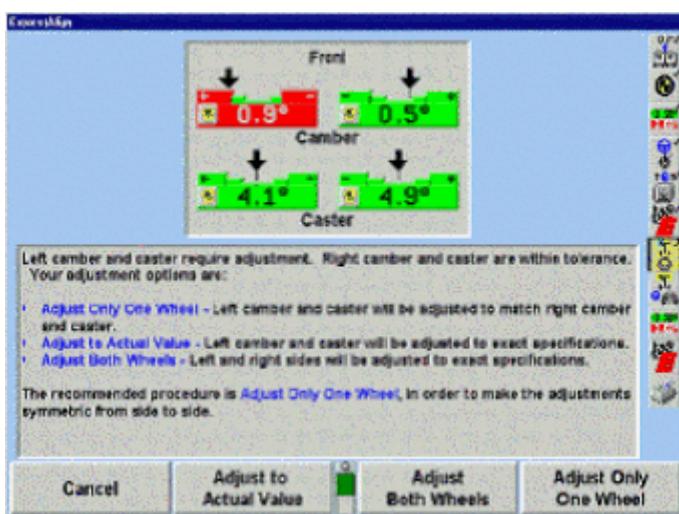
Selecting "Print Bushing and Template" will print the template of the bushing that can be helpful in placement of the bushing. The bushing is shown in the actual size so that the display may be used as a template.



Selecting "Select Bushing Brand" will present the technician with a list of bushing brands. The desired manufacturer can be selected by pressing ↑ or ↓ to highlight the manufacturer and selecting "OK".



When used with ExpressAlign® the Alignment Bushing Calculator allows for one wheel to be adjusted when the opposite wheel is within specification. When this situation occurs, the pop-up screen will provide you with a list of options that will allow you to select "Adjust Only One Wheel", "Adjust Both Wheels", or "Adjust to Actual Value".



Selecting "Adjust Only One Wheel" when the left wheel is out of specification will set the specification for the left wheel to right value + cross spec. If the right side were out of specification, then right wheel would be set to left value - cross spec.

To adjust both wheels using ABC with ExpressAlign®:

Adjust the left wheel first. After adjusting the left wheel, press "OK". WinAlign® will display the steer ahead screen again. This time, k_3 will read "Use Frozen Measurements".

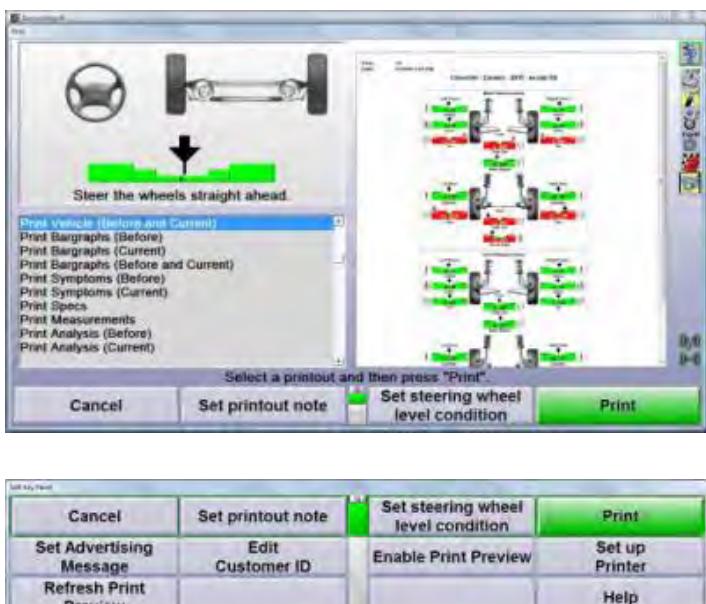
Press "Use Frozen Measurements" to bypass the steer ahead screen and use the previously frozen measurements. This prevents the user from having to remount the wheel and sensors, lower and jounce the vehicle,

re-compensate the sensors, and steer ahead to re-freeze the measurements.

When all adjustments are completed, press "OK" to return to the "Vehicle Measurements and Adjustments" primary screen. After adjusting camber and/or caster using ABC, lower and jounce the vehicle, then re-compensate the sensors.

2.13. Printing

Access the print selections from the "Vehicle Specifications" or the "Vehicle Measurements and Adjustments" primary screens. This screen will also be available at the end of the alignment process.

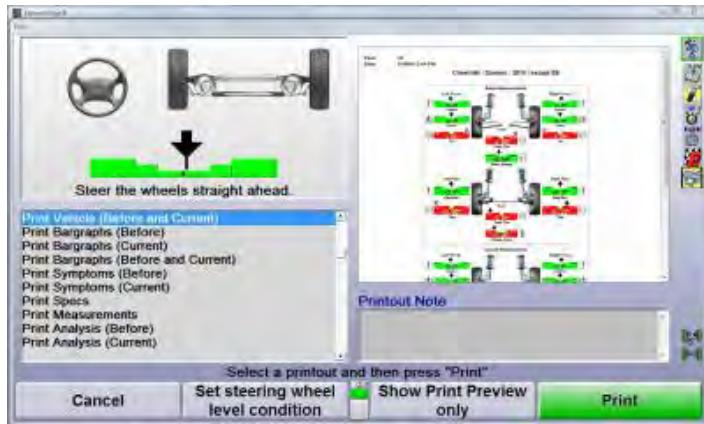


WinAlign® will remember the printout selected on the last alignment and automatically select the same printout for future alignments.

Selecting a printout in the selection box on the lower left portion of the screen will show a preview of that printout on the screen. When "Print" is selected WinAlign® will send the printout to the printer.

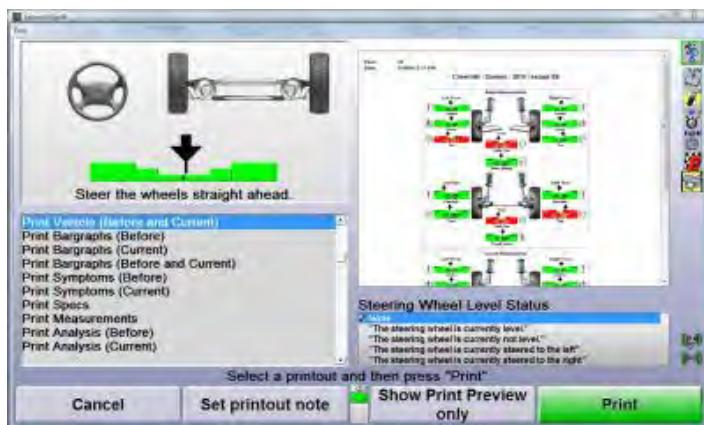
2.13.1. Set Printout Note

A note can be added to the printout by pressing "Set Printout Note" and typing in the text box provided below the print preview.



2.13.2. Set Steering Wheel Level Condition

Graphic and text information about the steering wheel level condition can be added to the printout by selecting "Set Steering Wheel Level Condition." Select the current status of the steering wheel from the selections provided below the print preview.



2.14. CodeLink Device

WinAlign® 11.0 and later supports CodeLink® which can be used to complete procedures required by the OEM during the alignment, such as resetting the steering angle sensor. For a list of supported manufacturers and vehicles please refer 1708-T available online via the HunterNet® 2 portal.

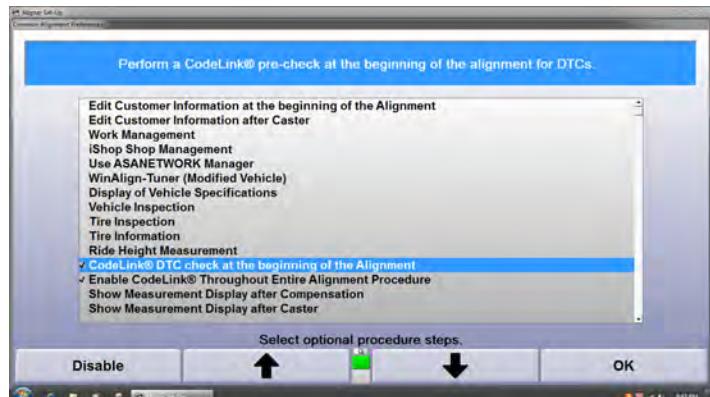


NOTICE

WinAlign® 14.0 and later supports using the remote control key pad on the CodeLink® device for the entire alignment procedure. Older versions will only function while the user is on CodeLink® screens. The device will not function as a remote control in other screens.

2.14.1. Setup Options

There is an option to enable CodeLink® throughout regular alignments and an option to perform a pre-alignment DTC check. The options are available from the "Common Alignment Preferences" setup menu.



When CodeLink® is enabled through the entire alignment, the keypad will function for entering data and navigating through screens using the K-buttons.

When "CodeLink® DTC check at the beginning of the alignment" is enabled, an additional step will be added to pull DTC's from the vehicle before starting the alignment.

2.14.2. Using CodeLink During Alignments

Recalling the VIN Using CodeLink II



NOTICE

This feature is not compatible with first generation CodeLink® devices.



NOTICE

This feature can only be used on OBDII-compliant vehicles (1996 model year or newer). Not all vehicles will have a VIN supplied.



NOTICE

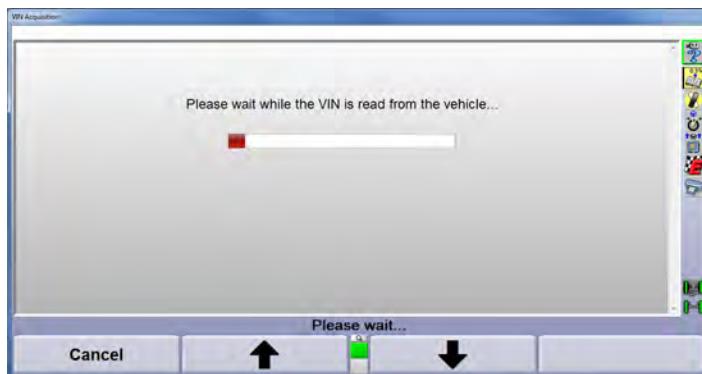
CodeLink® is to be plugged into the vehicle's DLC connector with the ignition OFF, follow the on screen instructions when connecting and disconnecting CodeLink®.

CodeLink® communicates with the console throughout the alignment process, but will only communicate with the vehicle and retrieve the VIN at the "Recall by VIN" screen.

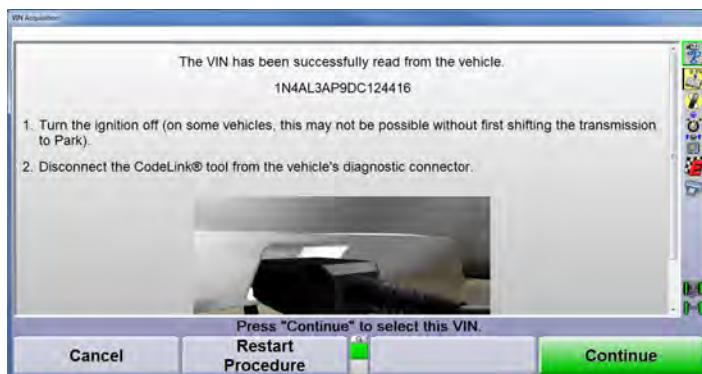
At the VIN recall screen, select "Recall VIN with CodeLink®"



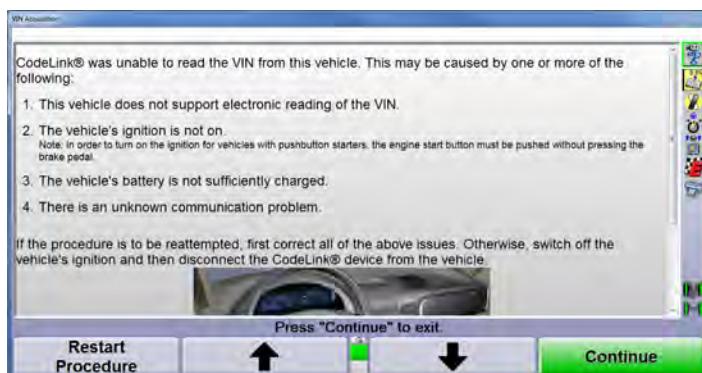
Follow the on-screen instructions, then select "Continue", CodeLink® will begin recalling the VIN.



If the scan is successful a screen will appear with the VIN, press "Continue" to proceed through the process.



If the scan is unsuccessful, a screen will appear with possible issues that may be causing the failure.



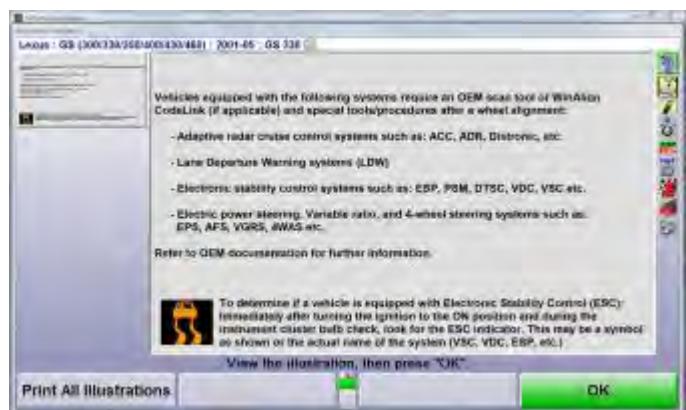
2.14.3. Checking ESC Related Diagnostic Trouble Codes Before Alignment

This procedure is a simple check to determine if there are any pre-existing DTC's set. You may choose to read DTC's at this time, however it is not required as part of the procedure. However, most manufacturers do require that any pre-existing faults be corrected before continuing.

When a CodeLink® supported vehicle is selected the CodeLink® icon,

 will appear in the Alignment Procedure Bar.

Also, a screen advising the user that the vehicle they are aligning will require CodeLink® interaction will also appear.



CodeLink® will pull DTCs from the vehicle before the start of the alignment. Follow the on-screen instructions, then select "Continue" to begin communicating with the vehicle.



Faults in systems related to the procedure will be displayed. The "Re-Read DTCs" soft key will re-read DTC's from the related systems. The "Clear DTCs" soft key will clear DTC's from the related systems.

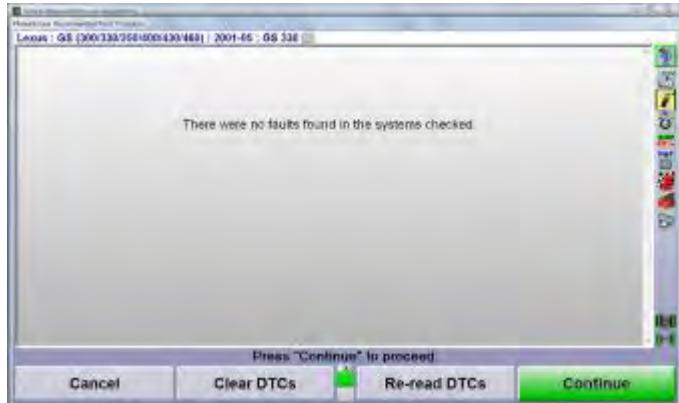
Press "Continue".



NOTICE

Any error codes present in the related systems will be cleared when the procedure is performed at the end of the alignment.

CodeLink® procedure. Select “Reset the Required On-Board Systems”

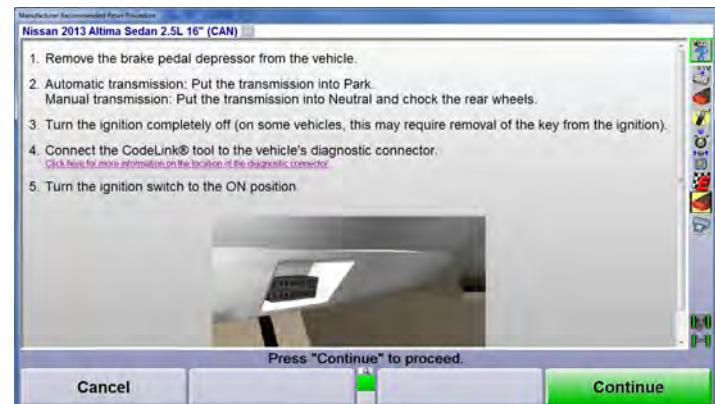


Show Vehicle Measurements

Check With ExpressAlign®

CodeLink® - Reset the Required On-Board Systems.

Follow the instructions on the screen precisely and in order. Press “Continue”, WinAlign® and the CodeLink® device will only communicate with the vehicle after “Continue” is pressed.



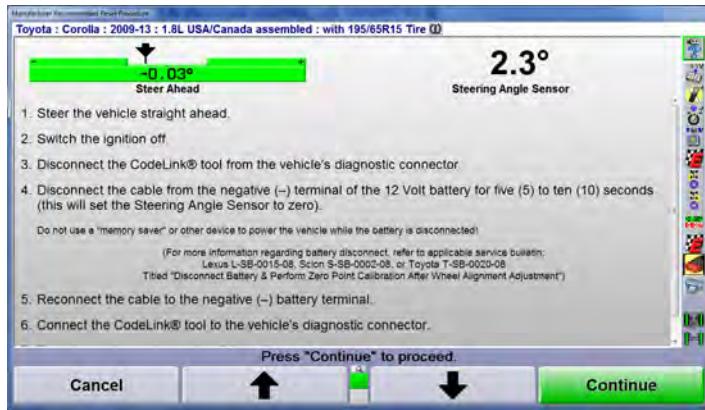
The “Manufacturer Recommended Reset Procedure” screen will appear. Follow the instructions on the screen precisely and in order. Press “Continue” when ready.



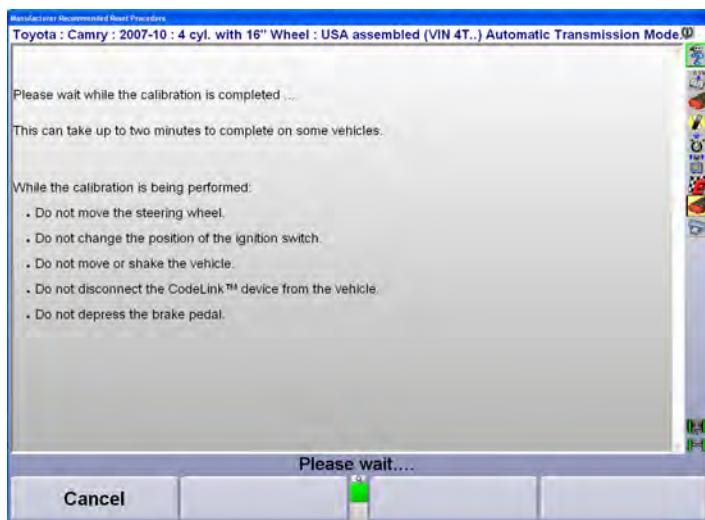
WARNING

When using the CodeLink® device it is very important to follow the on-screen instructions precisely and in order they are displayed.

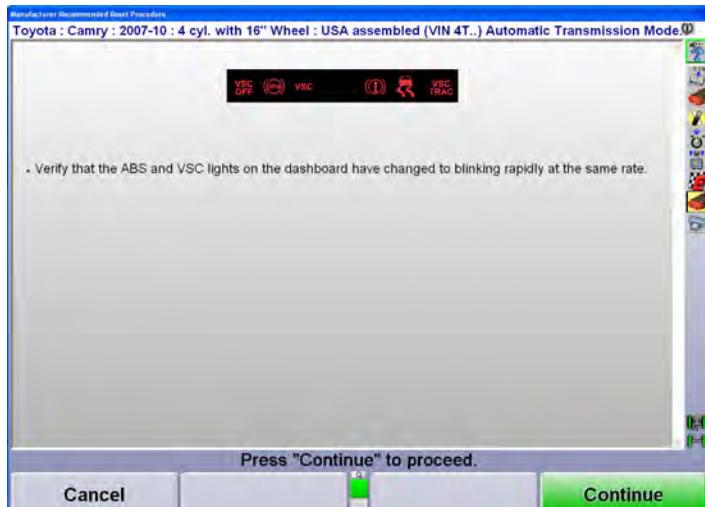
After all adjustments have been made and checked with ExpressAlign®, WinAlign® will prompt to perform the



WinAlign® and the CodeLink® device will communicate with the vehicle again.



There may be multiple screens shown with additional instructions. Follow the instructions on the screen precisely and in order. Press "Continue" when ready for each screen.



Some vehicles may display a screen after reset indicating that the steering angle has been reset (indicated by the "Steering Wheel Sensor" value on the right of the screen

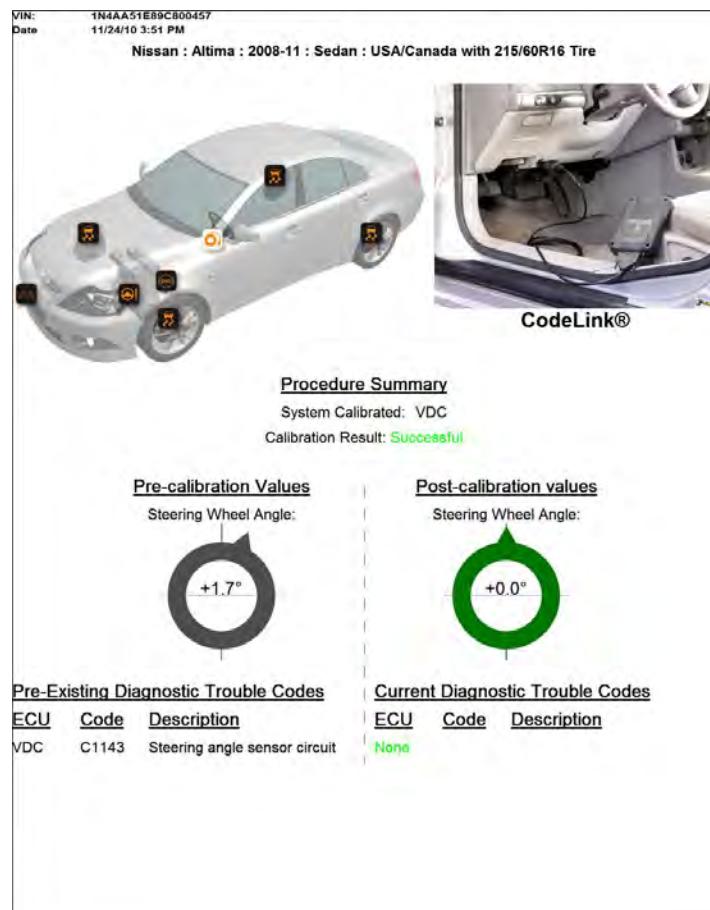
below). This closing screen may also have instructions for items that may need to be carried out upon completion. Be sure to print or take note of these instructions if they appear. Follow the instructions on the screen precisely and in order.

Press "Continue."

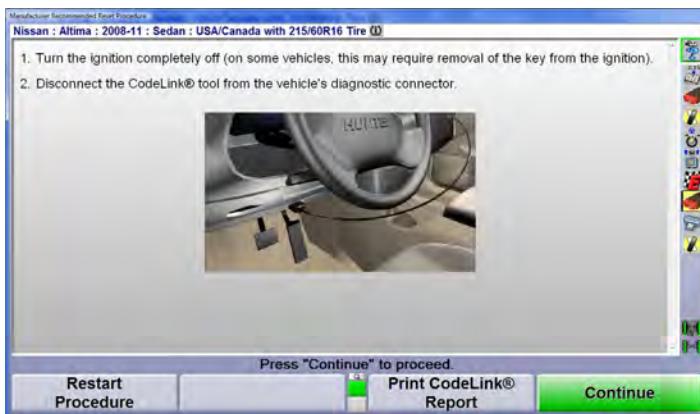


When all procedures are complete WinAlign® will prompt the user to remove the CodeLink® device from the vehicle. Follow the instructions on the screen precisely and in order.

Select "Print CodeLink® Report" if a detailed CodeLink® Report is desired.



Press "Continue" when ready.

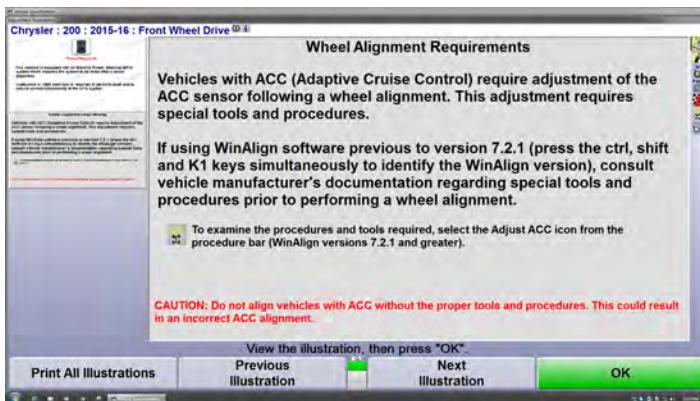


Continue to the ADAS reset if required.

2.15.3. ADAS Reset

The ADAS reset procedure may require special tools and procedures in order to manually adjust a sensor on the vehicle, be sure to carefully follow all on-screen instructions.

After recalling specs for an ADAS equipped vehicle, an additional information screen will appear at the beginning of the WinAlign® procedure that outlines the manufacturers reset procedure.

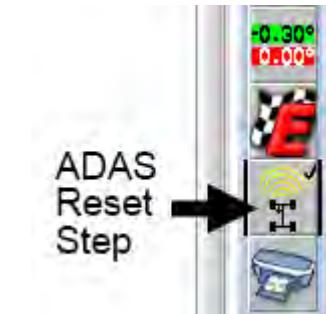


An additional step will also appear at the end of the alignment procedure.



NOTICE

Some procedures require a drive cycle to be completed during the reset procedure, follow all on screen instructions regarding criteria for the drive cycle.



Follow the on-screen instructions to perform the recommended reset procedure.

2.15.4. Example ADAS Reset Procedure



NOTICE

The actual reset procedure will vary by make and model, carefully follow the on-screen instructions in order to perform the reset. The following is an example procedure.

Follow the on-screen instructions to connect the CodeLink® device.

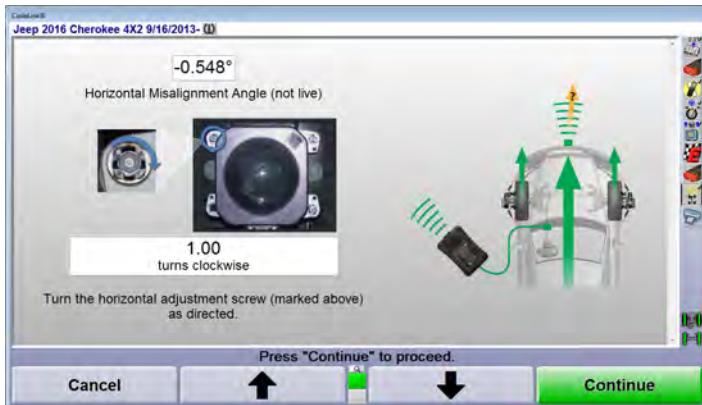
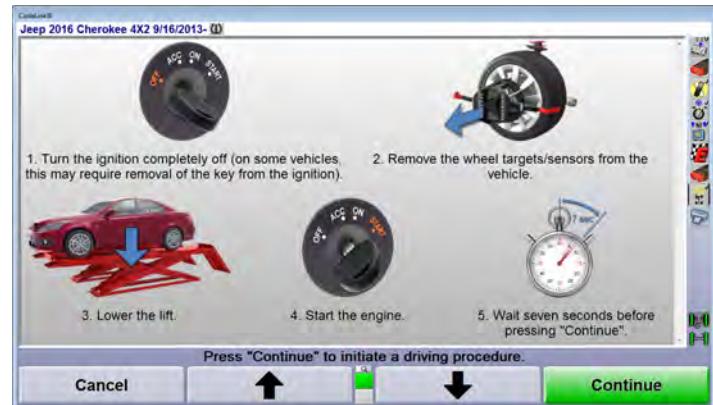


Follow the on-screen instructions for use of any required aftermarket tools. Make adjustments as indicated.



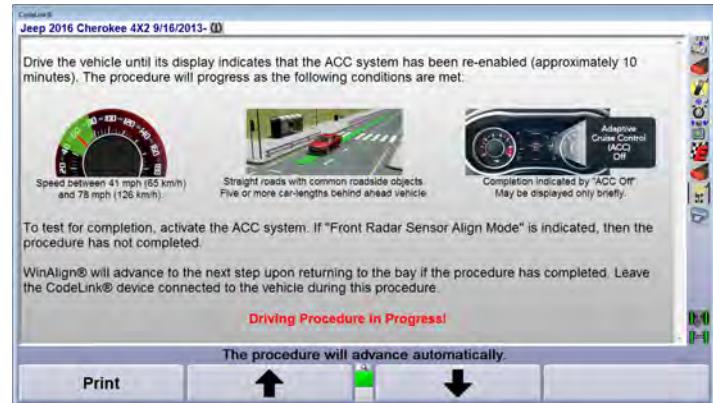
NOTICE

Some procedures require the use of OE fixtures and/or scan tools to reset the ADAS system(s). Refer to the ADAS reset screens within WinAlign® for detailed instructions.



Select "Continue", follow the on-screen instructions carefully as CodeLink® communicates with the vehicle and WinAlign®.

Perform the drive cycle as indicated on screen, make sure to complete to all criteria listed during the drive cycle.

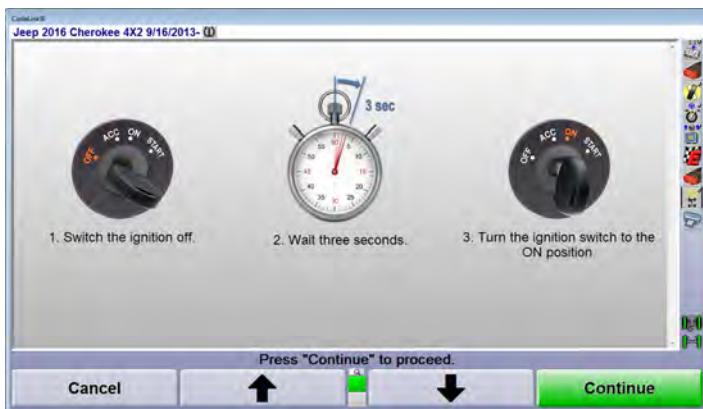


Continue through the process using the on screen instructions. In this example, CodeLink® will prepare for a drive cycle. Press "Continue" after completing the process as directed.

Upon returning to the alignment bay, CodeLink® will once again communicate with the vehicle and WinAlign®



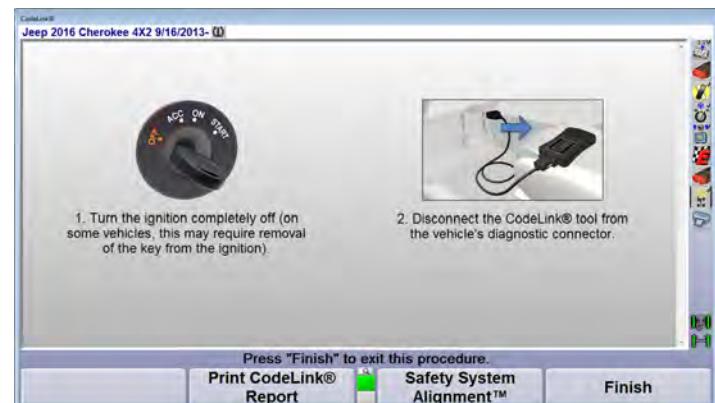
Cycle the ignition switch as indicated on the screen.



CodeLink® will check for DTCs at the end of the process and prompt the user to disconnect it from the OBD port.



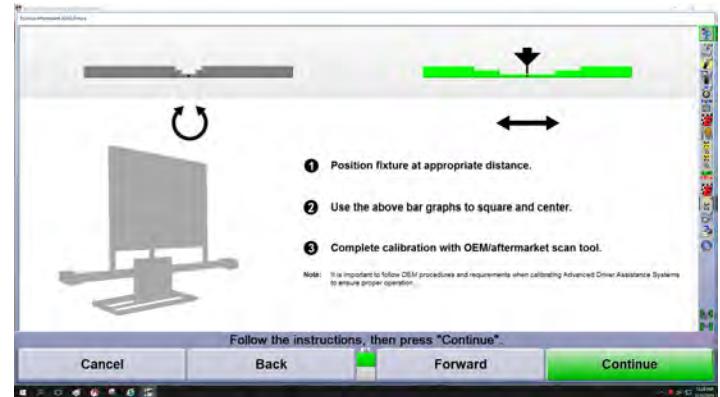
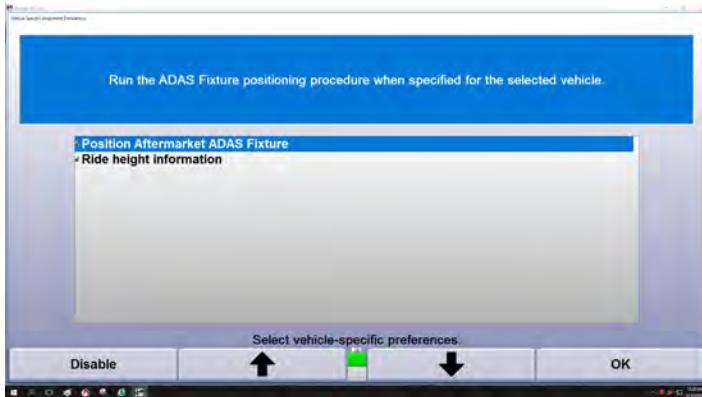
CodeLink® will complete the final step of the reset, then indicate whether or not the reset process was successful.



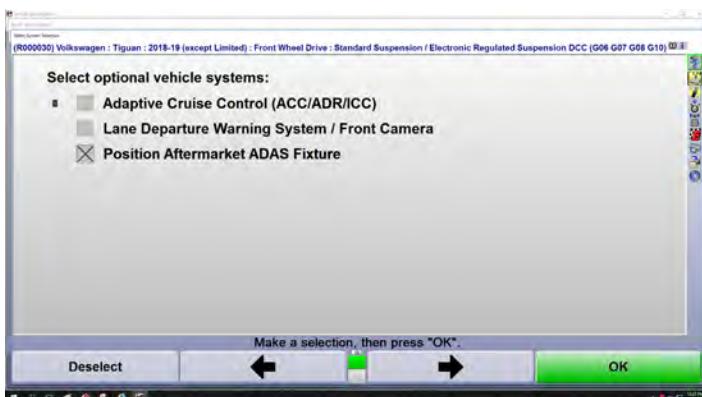
Finish the alignment as directed by WinAlign®.

2.15.5. Aftermarket ADAS Fixture Support

In WinAlign® 16.1®, users may choose to integrate their aligners with aftermarket ADAS fixtures. If desired, enable "Position Aftermarket ADAS Fixture" in the Vehicle Specific Alignment Preferences menu in set up.



After enabled, there will be a choice to enable the fixture on an alignment:



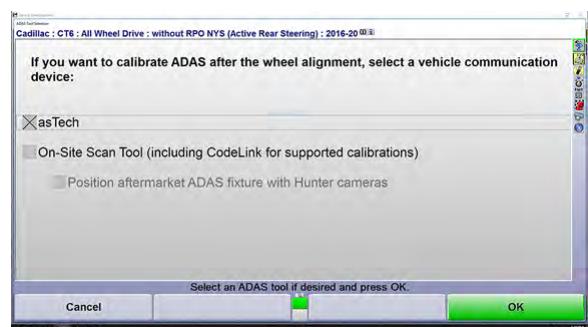
When enabled, the fixture will be a step in ExpressAlign®. WinAlign® directs users on setting up and positioning the fixture, as shown below. Users should refer to their scan tool for information on performing the ADAS reset.

2.16. asTech ADAS Device

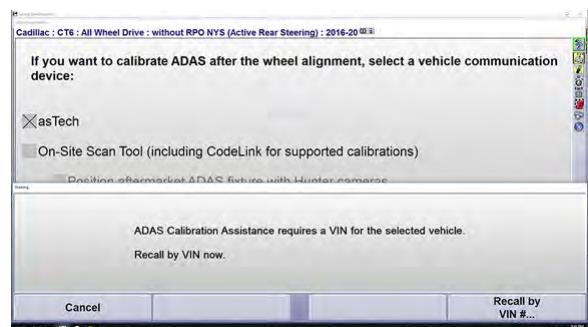
2.16.1. Alignments with asTech Device

On Monitor 1:

1. Select the vehicle you are aligning.
2. WinAlign will prompt you to select the device if you are calibrating ADAS after the alignment. Select asTech



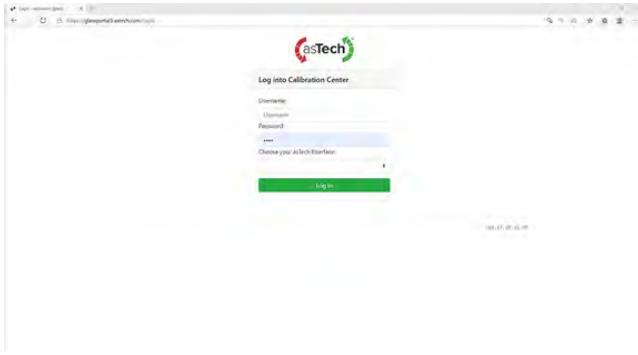
3. WinAlign will then ask for the vehicle VIN #



4. Proceed with alignment.

On Monitor 2:

1. Log into asTech. The very first time the asTech software will open Microsoft Edge on the second monitor. You will need to enter a (1) Username and (2) Password and (3) select the "asTech interface".



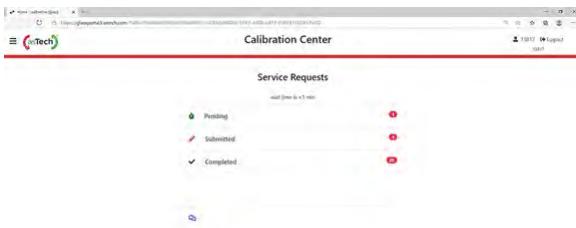
NOTICE

On the back of your asTech Device is a sticker with a "S/N" number and "KEY" number

- S/N is your Username for logging in.
- Key is your Password
- For "Chose your asTech Interface" select "Vehicle Calibration US/Canada"



2. asTech Home Screen.



2.16.2. Dynamic ADAS Reset Procedure

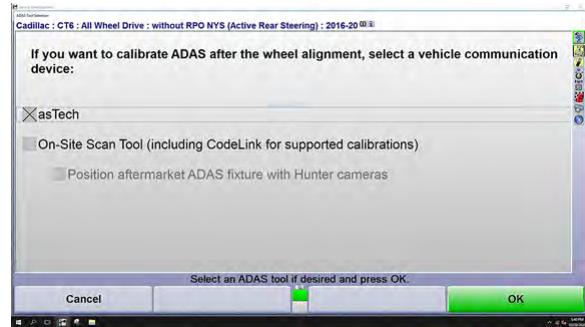
Overview of doing a dynamic (or driving) ADAS reset with Hunter aligner and asTech ADAS assist feature.



IMPORTANT

This type of reset involves driving the vehicle for a period of time and distance.

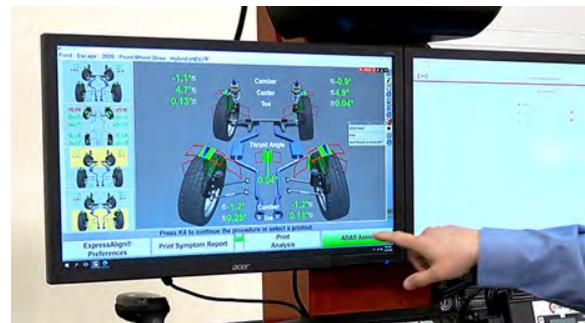
1. Select asTech during vehicle selection process.



2. Check alignment



3. Once you have measurements, press ADAS assist button.



NOTICE

Starting this procedure sends the applicable data to asTech.

4. Plug asTech Device into vehicles OBD2 port.





NOTICE

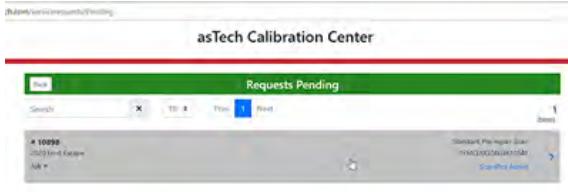
When plugged into the vehicle, the asTech device will automatically populate information and auto start the procedure.



IMPORTANT

A wireless hotspot (not Hunter provided) is needed to maintain internet connection during the driving portion.

5. Procedure will create a “pending request” on the asTech monitor. Click the pending request to move forward.



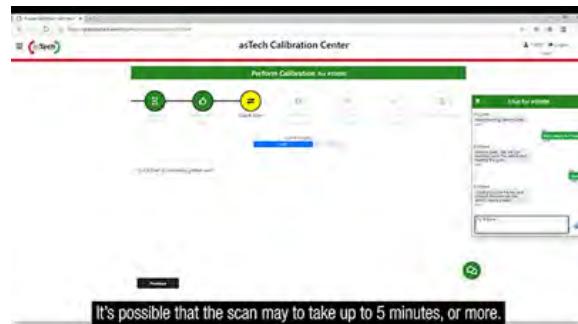
6. On the asTech screen fill in the needed vehicle information and press “Perform Calibration”.

Vehicle	1HMCUQD24UJ10548
Year	2020
Make	Ford
Model	Escape
Trim	Titanium
Engine	
Transmission	
Drive type	
Odometer	0
Odometer Units	mile
Notes	
<input type="button" value="Cancel"/> <input type="button" value="Perform Calibration"/>	

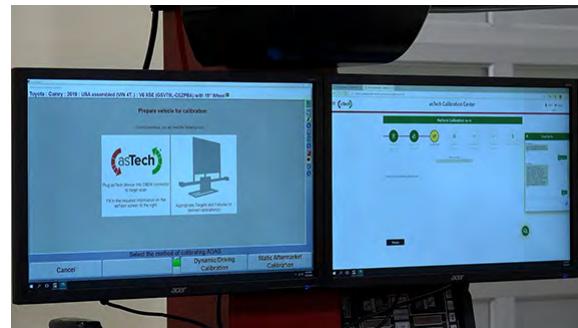
7. Fill in calibration preparation information and select “Ready to calibrate”.

asTech Calibration Center			
Prepare to Perform Calibration			
<p>Please supply the following to assist the Master Technician with calibration: <input type="checkbox"/> required</p>			
Reason for Calibration*	Systems to Calibrate*	Fixtures/Targets*	Pictures*
<input type="checkbox"/> All <input type="checkbox"/> Left Front Camera <input type="checkbox"/> Left Front Fender <input type="checkbox"/> Left Front Corner <input type="checkbox"/> Left Head <input type="checkbox"/> Left Side <input type="checkbox"/> Left Wheel <input type="checkbox"/> Leftside Windshield <input type="checkbox"/> Wheel Alignment <input type="checkbox"/> Other	<input type="checkbox"/> DSR <input type="checkbox"/> AutoMatrix ADAS <input type="checkbox"/> Bosch DMS3000 <input type="checkbox"/> Bosch SDF 415 <input type="checkbox"/> Side Camera <input type="checkbox"/> Opti-Alm <input type="checkbox"/> TEKA <input type="checkbox"/> Other	<input type="checkbox"/> Left Front <input type="checkbox"/> Front <input type="checkbox"/> Right Front <input type="checkbox"/> Left Rear <input type="checkbox"/> Rear <input type="checkbox"/> Right Rear <input type="checkbox"/> Other	<input type="checkbox"/>
<input type="button" value="Ready to Calibrate"/>			

You can use the chat box to communicate with the asTech technician.



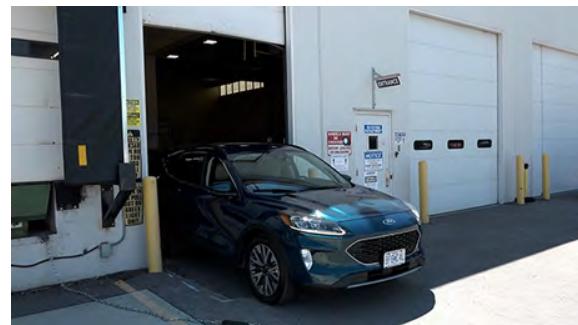
9. Select Dynamic Calibration in WinAlign.



10. Prep vehicle for driving portion of the procedure according to on screen instructions on the aligner monitor side.



11. Start driving portion of the procedure. Follow instructions from asTech technician regarding completion of calibration.



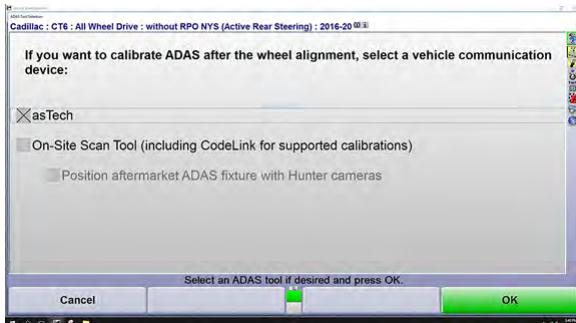
12. Retrieve report from asTech or HunterNet.

8. The as Tech master technician will arrive in the calibration window and will start the “Quick Scan”.

2.16.3. Static ADAS Reset Procedure

Overview of doing a static (or non-driving) ADAS reset with Hunter aligner and asTech ADAS assist feature.

1. Select asTech during vehicle selection process.



2. Check alignment. Remove front targets when done.



3. Once you have measurements, press ADAS assist button.



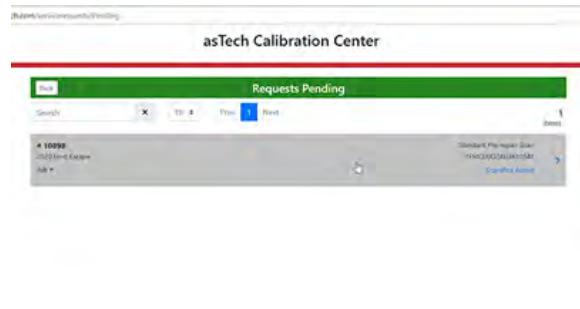
NOTICE

Starting this procedure sends the applicable data to asTech.

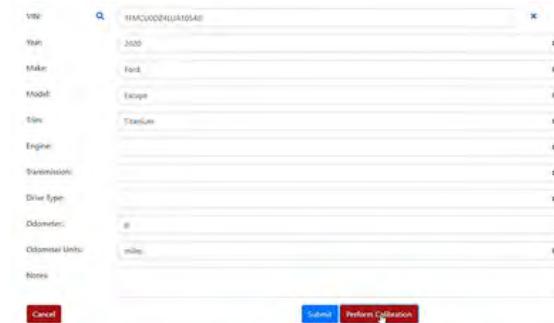
4. Plug asTech Device into vehicles OBD2 port and power on.



5. Procedure will create a “pending request” on the asTech monitor. Click the pending request to move forward.



6. On the asTech screen fill in the needed vehicle information and press “Perform Calibration”.



7. Fill in calibration preparation information and select “Ready to calibrate”.



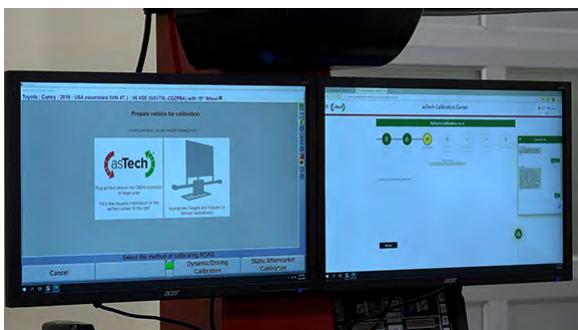
8. The asTech master technician will arrive in the calibration window and will start the “Quick Scan”. You can use the chat box to communicate with the asTech technician



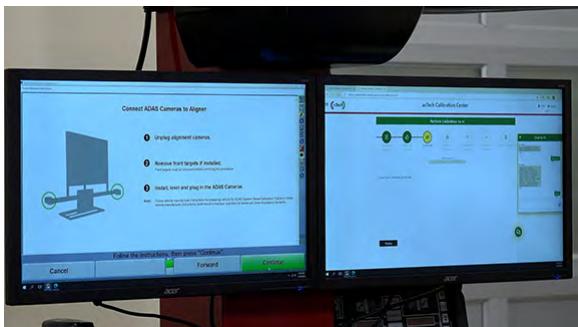
9. Select Static Calibration in WinAlign®.
10. Setup your static procedure ADAS fixture according to applicable manufacturer.



11. Select "Static ADAS Calibration" on WinAlign Monitor to start aligning ADAS fixture with aligner.



12. Follow the on screen ADAS instructions for fixture setup and make adjustments until fixture is aligned.

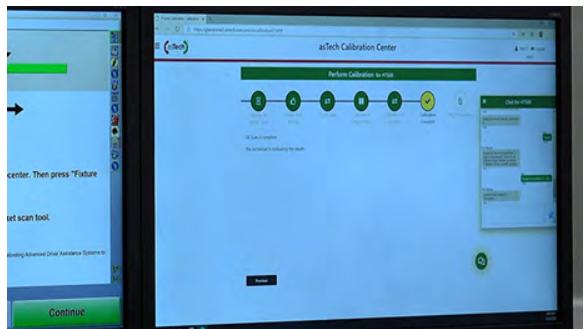


13. Follow on screen instructions from asTech technician for adjustments to the ADAS fixture as needed. Once fixture is aligned, press "Fixture was aligned" button to send information to asTech.

14. The asTech technician will guide you through the remaining steps to complete the calibration procedure.



15. Screen will move to calibration complete and the asTech technician will review the results.



16. Retrieve report from asTech or HunterNet®.

3. WinAlign® Tuner Alignment Procedure

3.1. WinAlign® Tuner Overview

WinAlign® Tuner is a specialized alignment procedure geared toward modified vehicles to enhance handling performance or tire life. While WinAlign® Tuner is designed for use primarily with lowered or modified vehicles, the procedure can be used on every car entering the shop.



WinAlign® Tuner works within the WinAlign® alignment software program with custom tailored features for handling the modified vehicle market. WinAlign® Tuner uses modified specifications, vehicle height, road tests, and other features designed for streamlining the process for vehicles that had previously been trial and error. Tuner is only available for WinAlign® version 8.1 and above. Tuner requires a specific electronic key to enable the WinAlign® Tuner procedure.

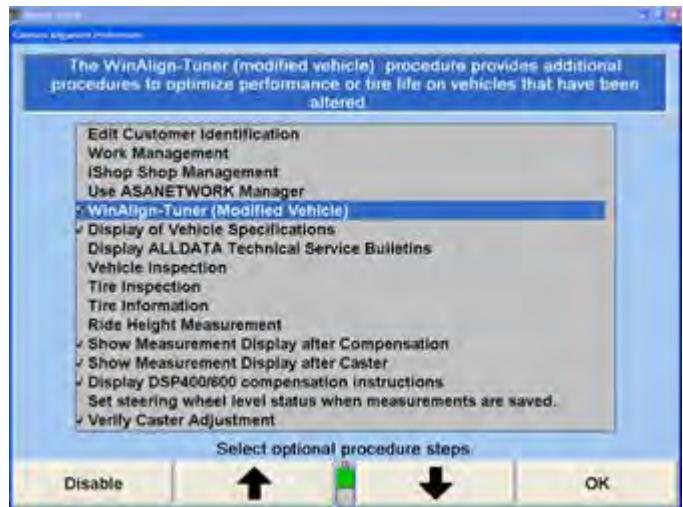


NOTICE

These instructions assume the technician is familiar with advanced alignment procedures.

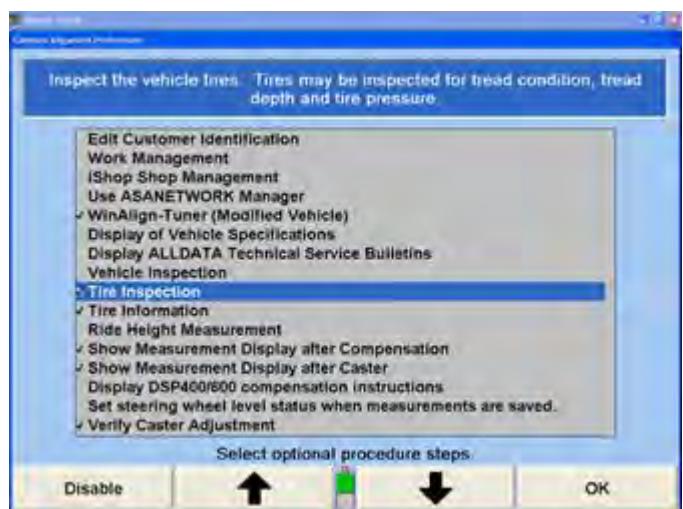
3.2. WinAlign Tuner Setup

Tuner can be accessed either by enabling it in Setup or within the alignment program. Enable Tuner in Setup by selecting "Common Alignment Preferences" under the "Alignment Procedure" heading.



Enable the selection and click "OK". WinAlign® Tuner is setup to run on every vehicle.

It may be desirable to enable the "Tire Inspection" and "Tire Information" steps in the "Common Alignment Preferences". Tire inspection and information are integral, but optional, steps while working on modified vehicles. Tread depth and tread wear can be indications of alignment problems.



If Tuner is not enabled in setup, it can be accessed during the alignment procedure by selecting the "WinAlign®-Tuner Procedure" from the "Recall Specifications" screen.

	Spec.	Tol.
Left Camber	-0.50°	1.25°
Right Camber	-0.50°	1.25°
Cross Camber		1.25°
Left Caster	2.75°	1.00°
Right Caster	2.75°	1.00°
Cross Caster		1.00°
Total Toe	0.00°	0.20°
Left SAI	°	°
Right SAI	°	°
Cross SAI		°
Rear		
Left Camber	-1.02°	1.25°
Right Camber	-1.02°	1.25°
Cross Camber		1.25°
Total Toe	0.50°	0.20°
Thrust Angle		°
View or edit the specifications.		
WinAlign-Tuner Procedure	Recall Specifications	Show Secondary Specifications
		Show Tools and Kits

WinAlign-Tuner (Modified Vehicle) Optional

 [Show performance guidelines](#)

 [Modify specifications](#)

 [Tools and Kits](#)

 [Ride Height](#)

 [Bump Steer](#)

 [Tire Temperatures after Road Test](#)

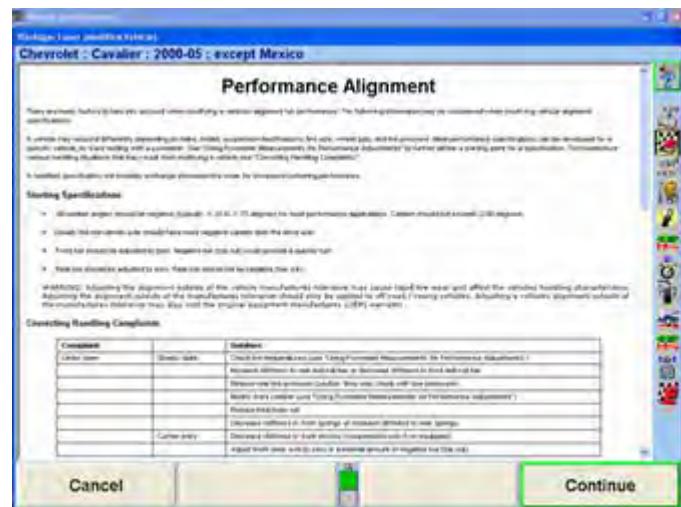
3.3. WinAlign Tuner Procedure

The Tuner procedure varies from a standard alignment in that it is geared for modified vehicles. WinAlign® Tuner specifies options to enhance tire life, or increase handling performance.

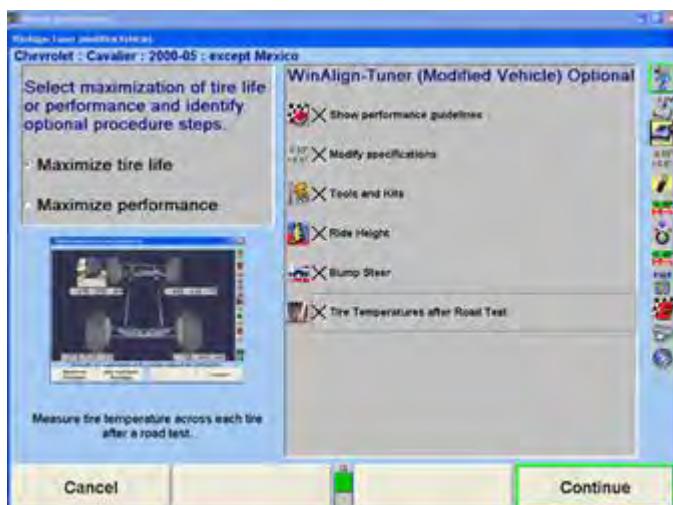
3.4. WinAlign Tuner Options

WinAlign® Tuner is designed to improve one of two alignment characteristics: maximizing tire life, or maximizing performance. The Tuner setup screen offers selections to tailor the process.

“Show Performance Guidelines” displays a printable text document that outlines handling complaints and solutions, plus details on using the pyrometer (a device for measuring tire temperature).



“Modify Specifications” opens a special vehicle specifications screen that displays both the original spec and the modified spec. The Performance Guidelines document offers suggestions for modified specs.



Consult the customer on their driving styles and vehicle uses and determine their needs. Begin by selecting “Maximize Tire Life” or “Maximize Performance”. Select or deselect the options that are desired.

	Spec.	Tol.
Front		
Left Camber	Original: 0.20° Modified: -0.20°	0.75°
Right Camber	Original: -0.20° Modified: -0.20°	0.75°
Cross Camber		0.75°
Left Caster	Original: 4.10° Modified: 4.10°	0.75°
Right Caster	Original: 4.10° Modified: 4.10°	0.75°
Cross Caster		0.75°
Total Toe	Original: 0.10° Modified: 0.10°	0.20°
Left SAI		0°
Right SAI		0°
Cross SAI		0°
Rear		
Left Camber	Original: -0.25° Modified: -0.25°	0.50°
Right Camber	Original: -0.25° Modified: -0.25°	0.50°
Cross Camber		0°
Total Toe	Original: 0.20° Modified: 0.20°	0.20°
Thrust Angle		0.30°
View or edit the specifications.		
WinAlign-Tuner Procedure	Recall Specifications	Show Secondary Specifications
		Show Tools and Kits



“Tools and Kits” opens a “Tools and Kits” screen that displays parts specifically for modified vehicles. Height modified vehicles often require special adjusters and kits. Tools and Kits for WinAlign® Tuner offers these parts prior to alignment. Review the adjusters, upgrades, and tools presented. Choices will vary according to the vehicle. It may be necessary to install these prior to any alignment adjustments.

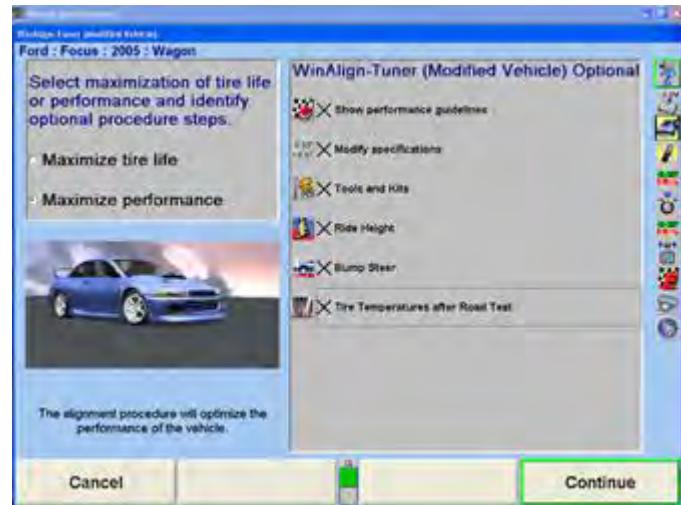


“Ride Height” displays a “Vehicle Height” screen that measures fender and axle height.

“Bump Steer” enables the measurement of changes in alignment angles as a vehicle is raised, and lowered (using the Bump Steer winch). The Bump Steer procedure is also available in the standard alignment procedure under “Additional Measurements”.



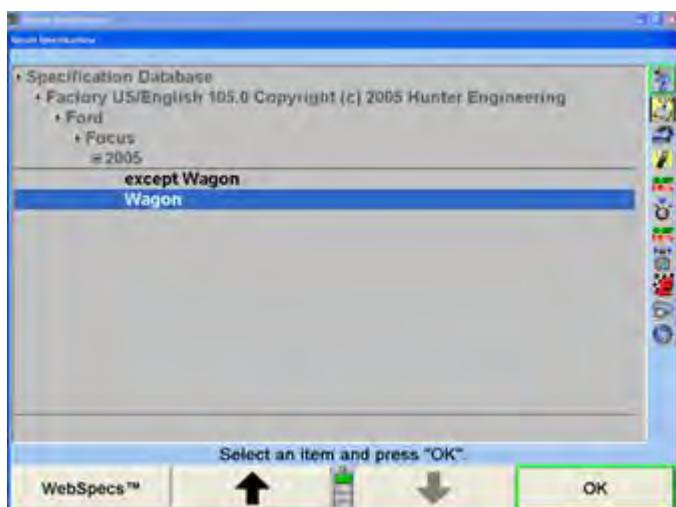
“Tire Temperatures after Road Test” procedure instructions are outlined in the Performance Alignment document. This procedure uses a pyrometer to measure the tread temperature in various locations of the tires after road test(s) to determine areas of the tire that have undue stress.



3.4.1. Performing a Vehicle Alignment with WinAlign® Tuner

The following example alignment procedure will have WinAlign® Tuner enabled in Setup.

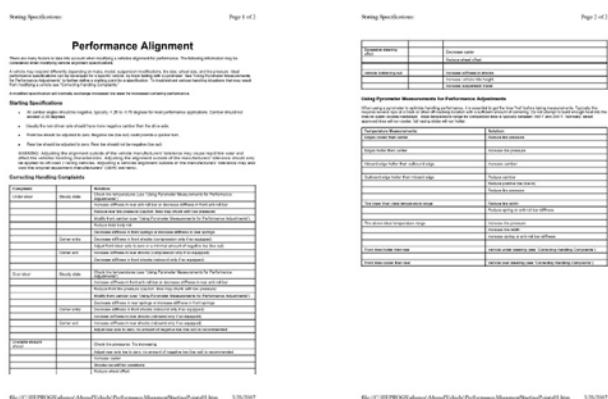
Select the appropriate vehicle specifications.



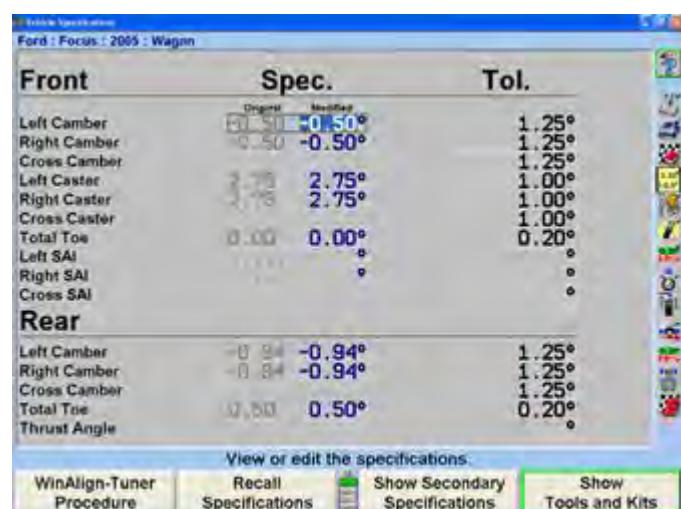
Determine the customer's needs and select the appropriate option for maximizing tire life or maximizing performance. Select the Tuner options as described in the section above. The following example selects "Maximize Performance" with all options checked.

Select "Continue" to display the "Performance Alignment" document. Select "Print" to print the entire document.

This is a generic document and is not individualized for each specific car.

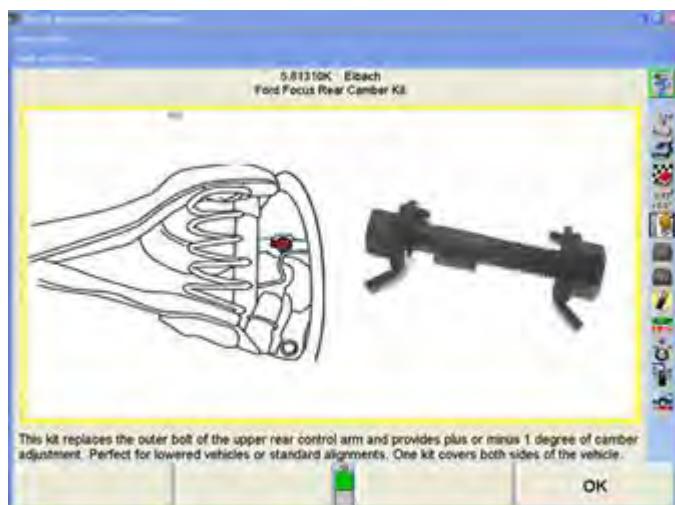
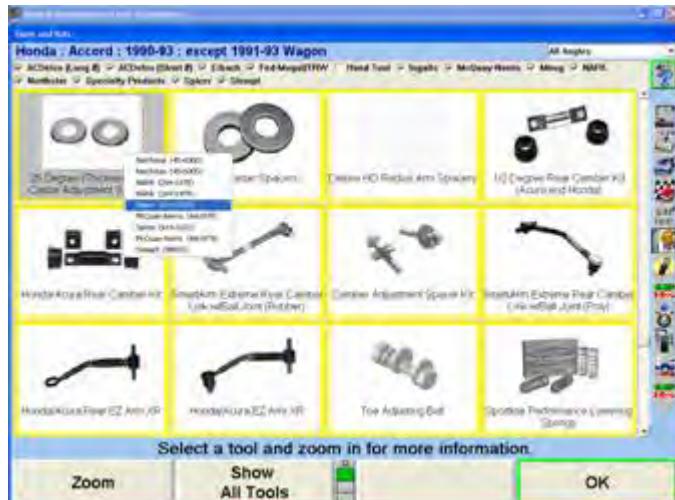


Select "Continue" to display the "Vehicle Specifications" screen for modified specifications. Modify specifications according to vehicle testing and instructions on the above document.



For more information on specifications refer to section [“Vehicle Specifications \[42\].”](#)

Select "Show Tools and Kits" for modified vehicle adjustment parts and required tools. Tools and Kits contains suspension components, as well. Select a part on the screen. If the part is available from multiple manufacturers a small pop-up window will appear listing the manufacturer and the part number. The example below shows a rear camber adjusting kit available from seven manufacturers. Select the manufacturer desired and a basic description and instructions screen will appear.



Selecting “Show All Tools” will display all tools and kits available from all manufacturers that are selected. To return to the above screen select “Show Summary.”

If a part has the "Order Now" symbol or softkey the part can be ordered online, providing that the aligner has an internet connection. Select the "Order Now" button to connect to the part manufacturer website. Complete the information and check shipping address. Once the item has been ordered, select "Continue".



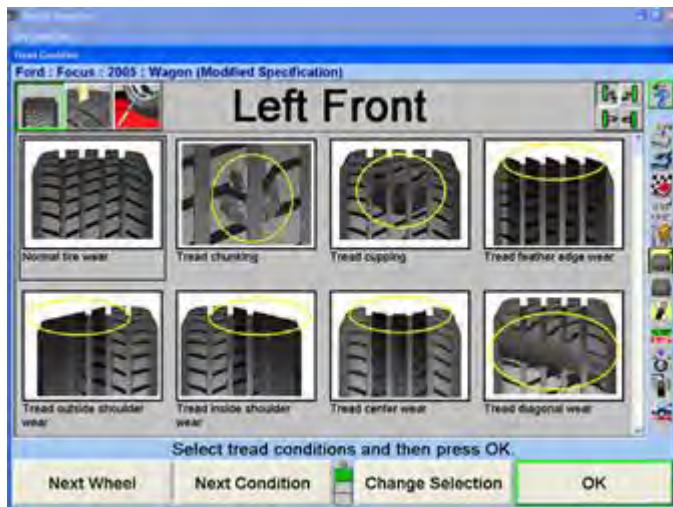
The Tools and Kits screen will reappear. Select "OK" to continue with the alignment procedure.

For more information on Tools and Kits refer to “[Tools and Kits \[236\]](#).”

If “Tire Condition” and “Tire Information” are enabled in Setup, these steps will follow.

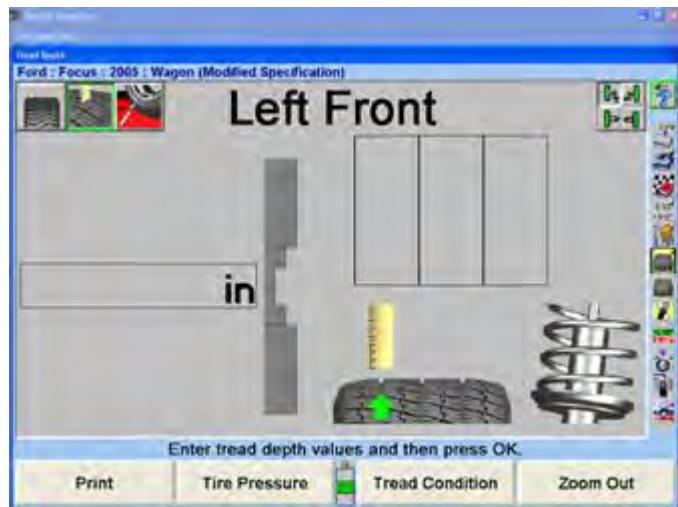
Tire Condition identifies wear problems and tire safety conditions such as bulges, cracks, splits, and foreign objects. Select each condition that applies to each tire assembly.

Use the tire position indicator to change wheel selection.

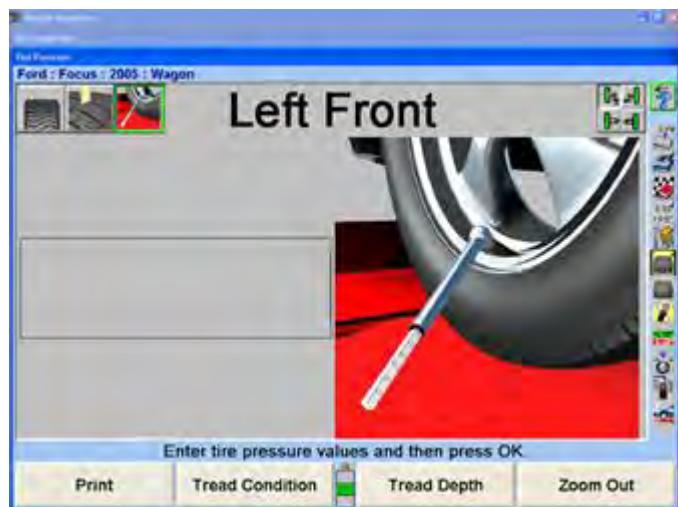
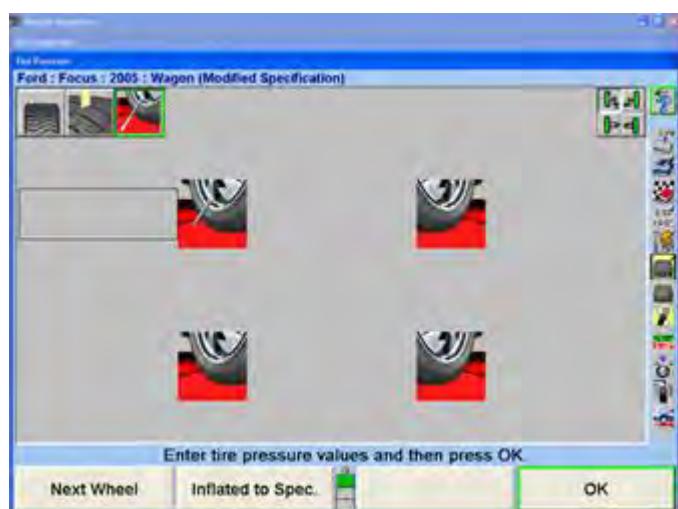


Select "OK" when all tires have been inspected for wear and damage.

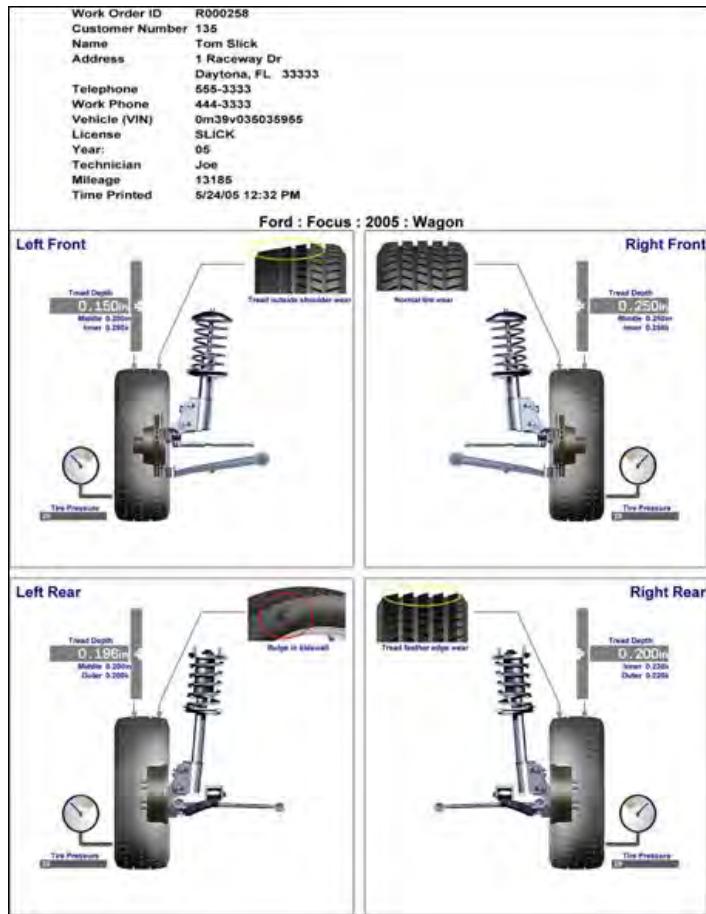
Measure the tread depth and enter with the keyboard. Selecting "Zoom In" shows a detail of each tire. Using the Zoom feature to enter the measured tread depth from three areas: inside, middle, and outside. Wear patterns may be a result of alignment, under-inflation, over-inflation, hard braking, etc. It may be necessary to rotate the tires prior to any road tests. Enter the tread depth for each tire and select "OK".



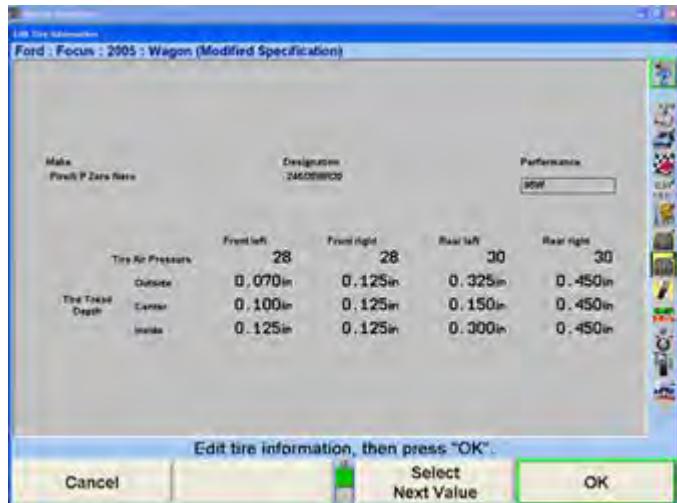
Check and adjust tire inflation pressure. If the vehicle has the original tire and wheel assemblies use the vehicle manufacturer's recommended tire inflation. If the vehicle has aftermarket tire assemblies, use tire wear patterns and check with the vehicle owner to determine the correct p.s.i.



Select "OK" to continue or select "Print" to print all of the collected tire information.

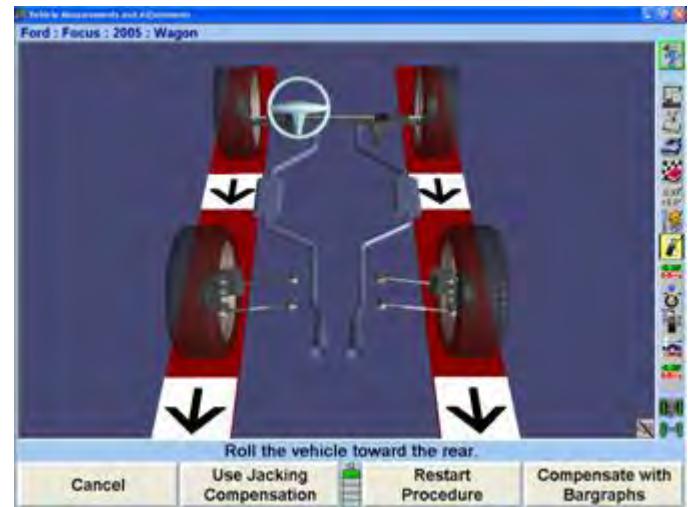


All of the previously collected tire information is added to the "Tire Information" screen. Complete the remaining blanks for tire manufacturer, tire size, and performance rating.

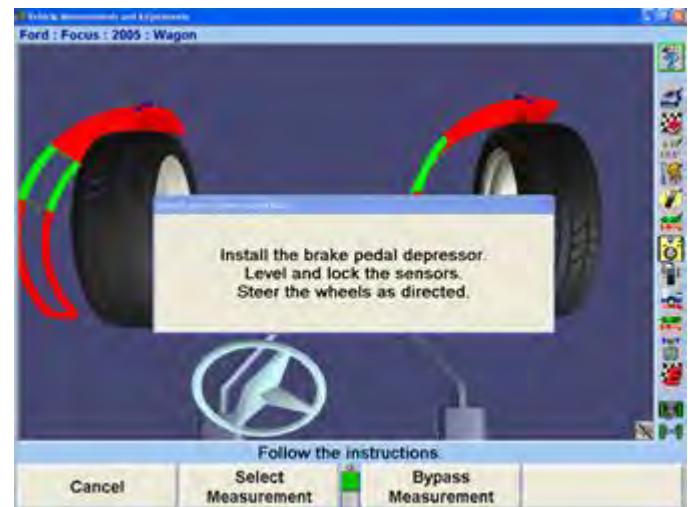


Select "OK" when all fields are completed.

Mount and compensate sensors and select "Continue". For more information on sensors and adaptors refer to "[Mounting Sensors or Targets® onto Wheel Adaptors \[31\]](#)".

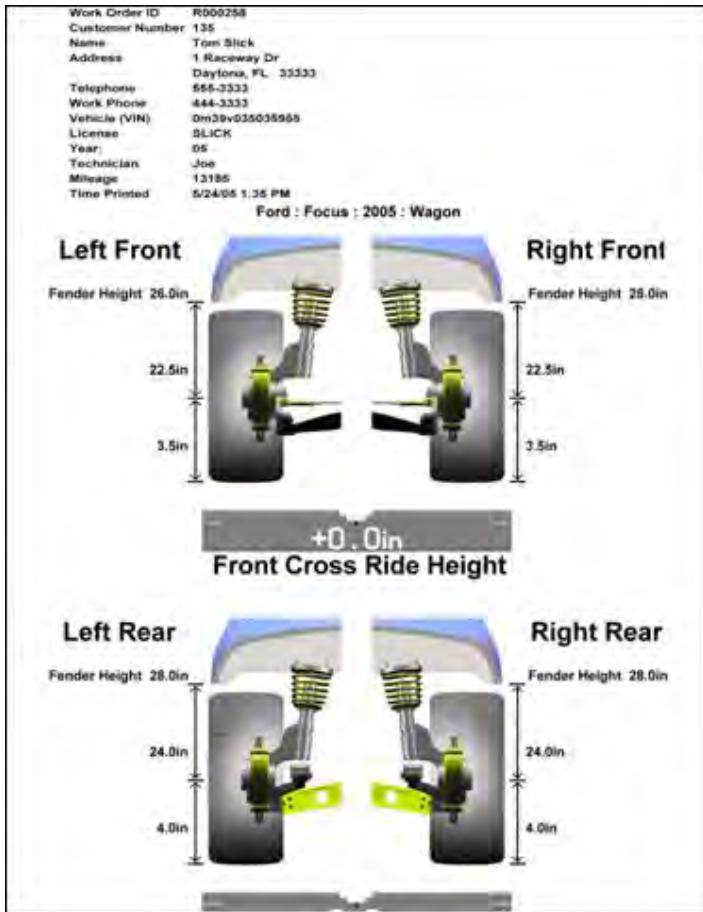


Measure caster.



Measure fender height and axle height. Height can be measured manually or measured using live targets. Unlike conventional ride height measurements that are specific to each vehicle, Vehicle Height measures just fender and axle heights.

Select "Print" for a graphical printout of ride height and select "OK" after all values have been entered and to continue with the alignment process.



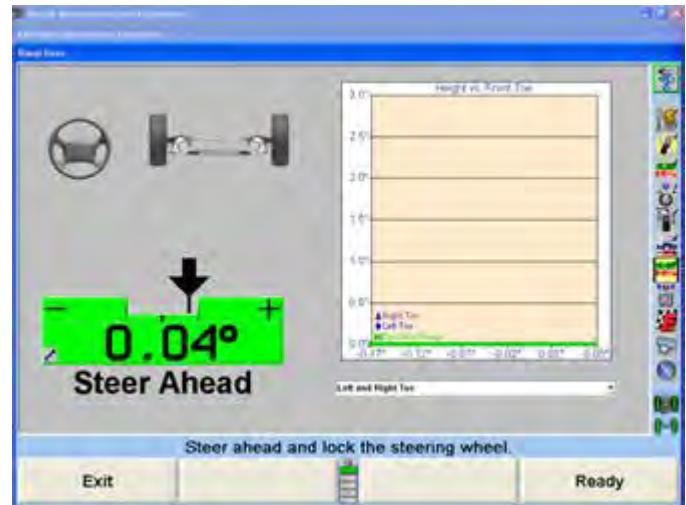
The Tuner alignment procedure continues with the Bump Steer measurement. Bump Steer measures any toe change while raising or lowering a vehicle.



NOTICE

Bump Steer is also accessible during conventional alignments under the "Additional Measurements" softkey.

When the "Bump Steer" screen appears make sure the vehicle is steered straight ahead according to the bar graph displayed. Select "Ready" to continue.



Below is a list of the Bump Steer measurement softkey functions available.

Soft Key Panel			
Exit	Down	Up	Snapshot Values
Restart Procedure	Undo last Snapshot	Save Before Measurements	Hide "Before" Measurements
Print	Clear current values		
Save Values	Load saved values	Load for comparison	Copy Chart to clipboard
Show File Information	Show Comparison File Info		Help

Select "Up" or "Down" when raising or lowering the vehicle on the rack. Height will be illustrated in .5" increments. The bar graphs are live and will reflect any changes in alignment angles. The drop-down menu offers a list of different angle views.

"Snapshot Values" will take an immediate image of the incremental measurements. "Undo Last Snapshot" will remove the previous incremental image snapshot.

"Save Before Measurements" will save the current collective bump steer measurements as before measurements, indicating the initial status of the vehicle. "Hide Before Measurements" will hide the before measurements from the screen. Select "Clear Current Values" to remove the values completely.

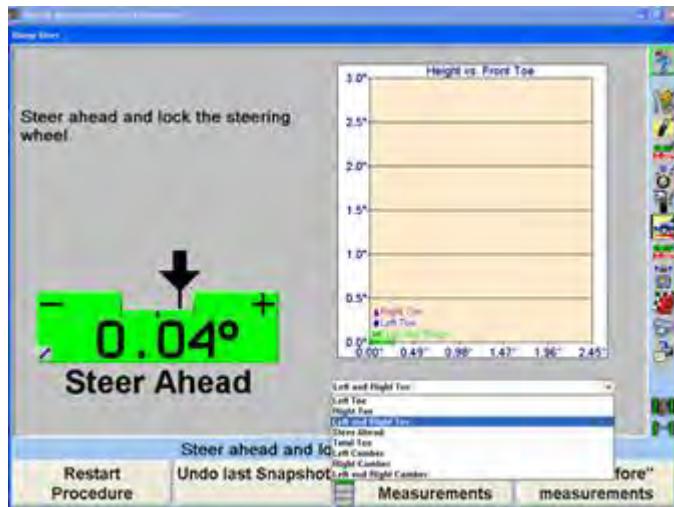
Select "Save Values" to save the measurements to a USB drive. "Load Saved Values" will retrieve measurements from the USB drive. "Load for Comparison" downloads the measurements to the screen indicated by a dotted line for comparison to current live readings.

"Copy Chart to Clipboard" saves the current visible chart to the Windows clipboard. Run the WordPad program and select "paste" to transfer the chart as an image to a WordPad document.

"Show File Information" displays the specifics of the current measurements in tabulated text format. "Show Comparison File Info" displays the same information for the loaded comparison file.

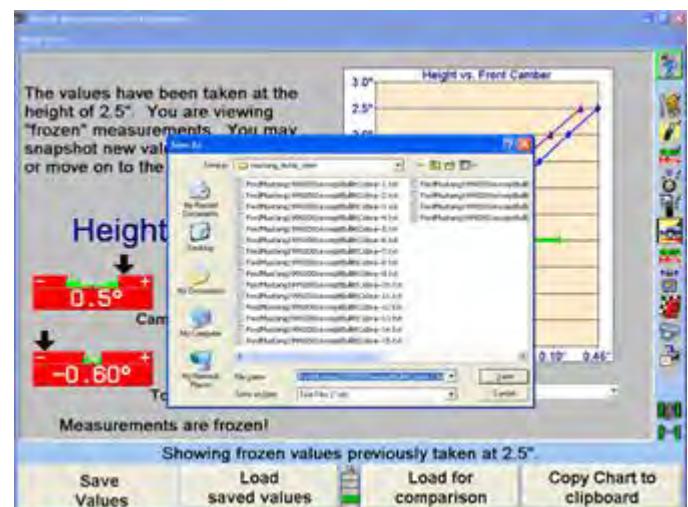
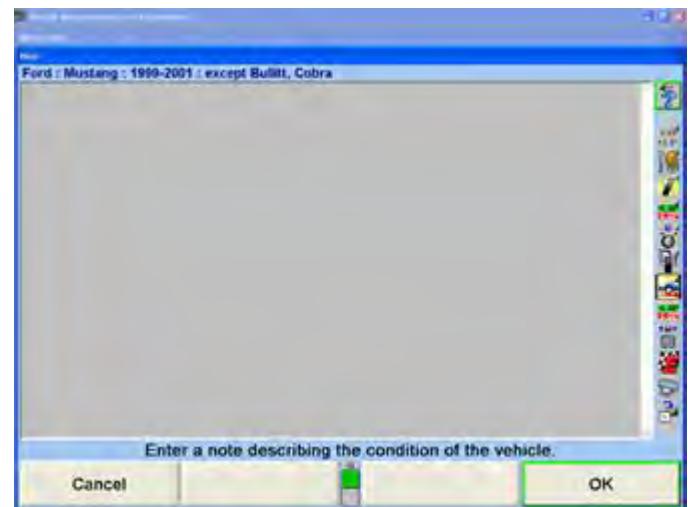
Select "Print" to print all the measurements charts.

Follow the instructions on the screen. Take a snapshot at ride height. Raise the rack and select "Snapshot Values" to measure the changes as the vehicle rises. Snapshots can be taken as often as desired. Raise the vehicle at least three inches to measure incremental changes. Use the drop-down menu to select different angle views. Using the mouse to select various snapshots will produce a VirtualView image of the front wheels. Click and hold the left mouse button and move the mouse around the bar graph to change the VirtualView image displayed.

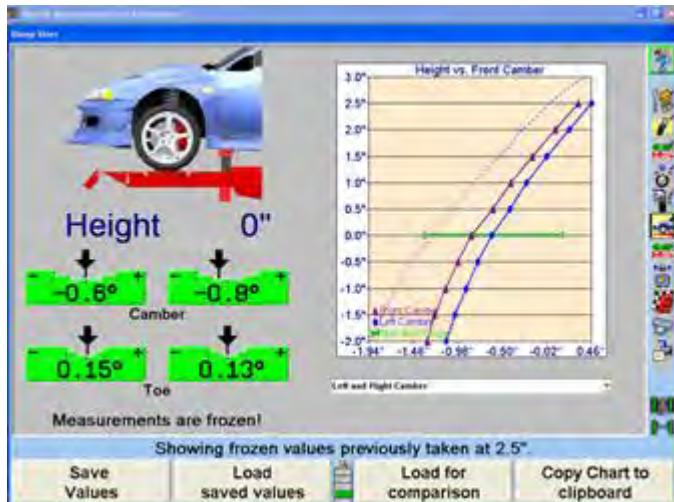


After lifting the vehicle to a desired height, repeat the process as the vehicle is lowered. At ride height connect the Bump Steer Winch. Using the winch compress the vehicle below ride height, continuing to take snapshots at various increments.

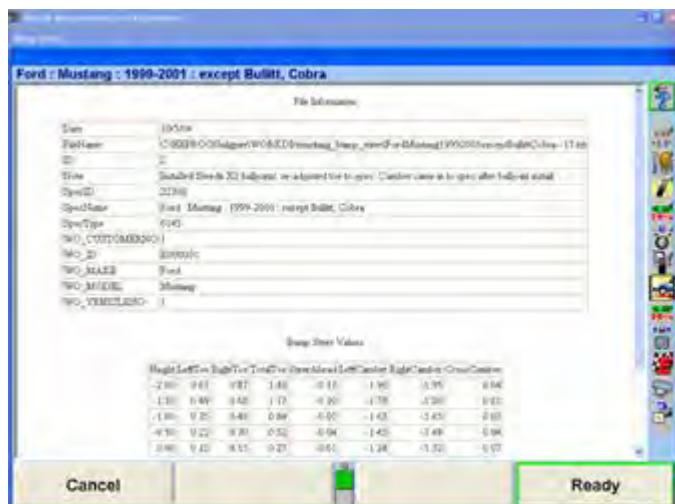
Once all measurements have been captured, select "Save Values" to store measurements to a USB drive. These measurements can be recalled at any time. A note can be stored with the readings. Enter any specific text necessary to be stored with the measurements and select "OK". Insert a USB drive and select save. A custom name can be entered, otherwise the measurements will be saved under the specs name (i.e. "FordFocus2005exceptWagon.txt").



Saved results can later be uploaded by selecting, "Load for Comparison". When the softkey is selected, choose the location on the PC (or USB drive) where the .txt resides. Select the file and click "Open". The image of the saved results will display as a dotted line.



Select "Show File Information" or "Show Comparison File Info" to view table formatted text of the measurements. These tables can also be printed.

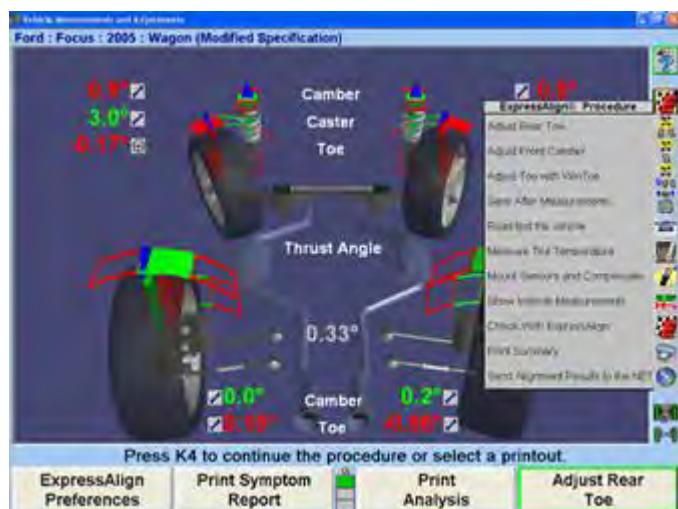


Select "Exit" when all measurements have been completed and reviewed.

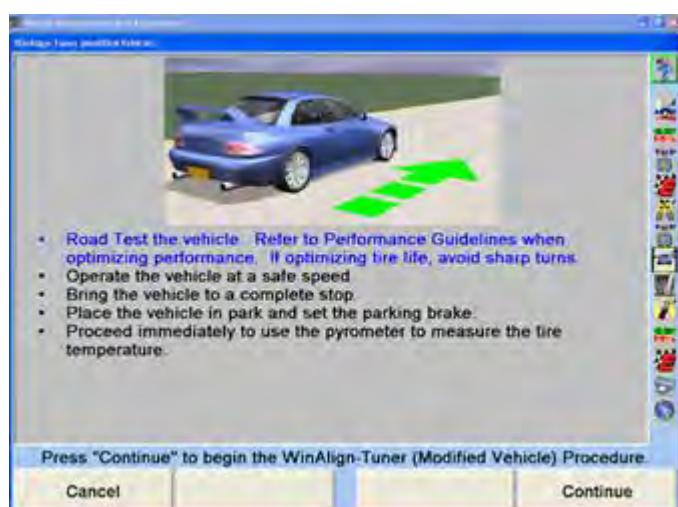
Select "Save Before Measurements". All preliminary measurements are completed.



Follow the procedure on the ExpressAlign® menu. Notice the following example includes Tire Temperature Test.



Proceed with all vehicle adjustments as indicated by the ExpressAlign® menu. Once all adjustments have been completed, remove the sensors and adaptors and follow the instructions for the Tire Temperature Test.



Prior to road testing the vehicle check the condition and air pressure of the tires. Always check the tire pressure while the tire is cold (at rest for at least one hour, or driven for less than one mile). Check with the vehicle owner's recommendations. Some experimentation with tire pressure is normal on modified vehicles. Vehicles that have after-market wheels and tires may not follow the vehicle manufacturer's recommended tire inflation. Vehicles with over-sized wheels and tires, and higher speed ratings will displace the load across a wider surface and may not need the maximum air pressure as listed on the tire. In many cases, the necessary tire pressure will be significantly lower.

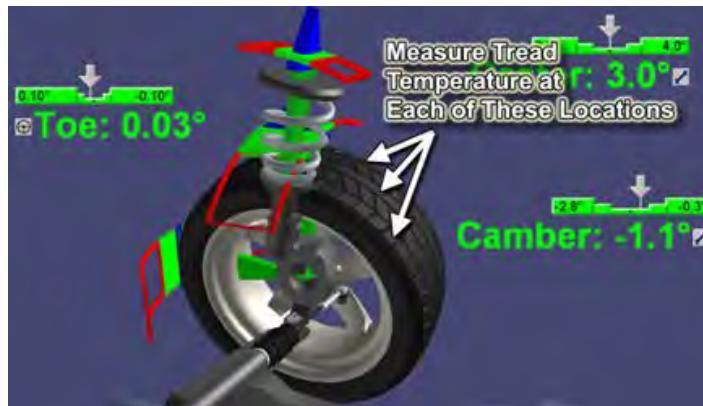
Begin by road testing the vehicle. For Tuner alignments that maximize tire life the road test should be conducted on a straight stretch of road, with little or no traffic. A closed track is the ideal location. Do not use a road that has excessive curves, or poor road surface conditions. The procedure is designed to test the wearing conditions of the tires under as little stress as possible.

Road tests for Tuner alignments that maximize handling should be conducted on a test track, if possible with a sufficient amount of cornering. Getting the tires "hot" in this manner is not recommended on public streets.

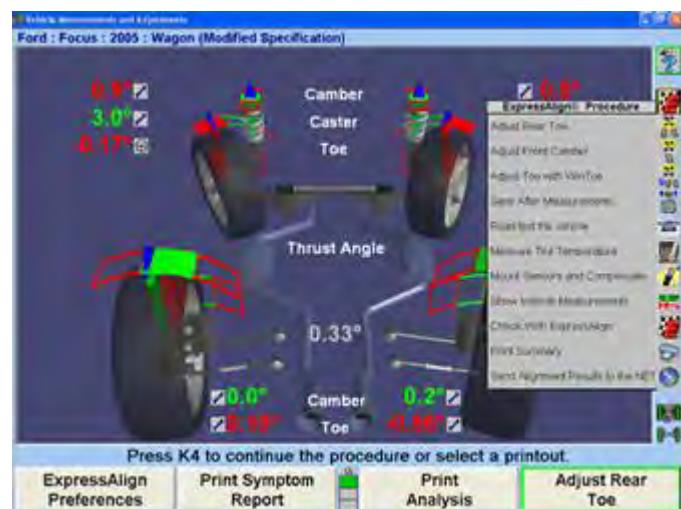
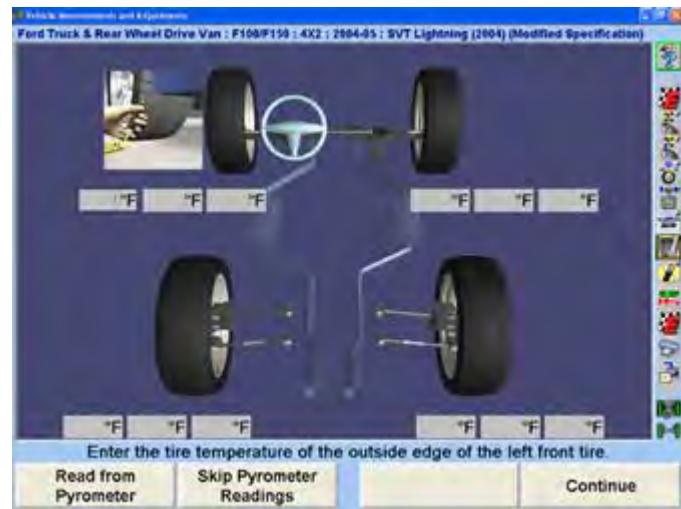
Uneven tire temperature across the face of the tread indicates greater force on various portions of the tire resulting in uneven wear and uneven contact with the road surface.

Test the vehicle under safe conditions and speed to adequately heat up the tires. Stop the vehicle and set the parking brake.

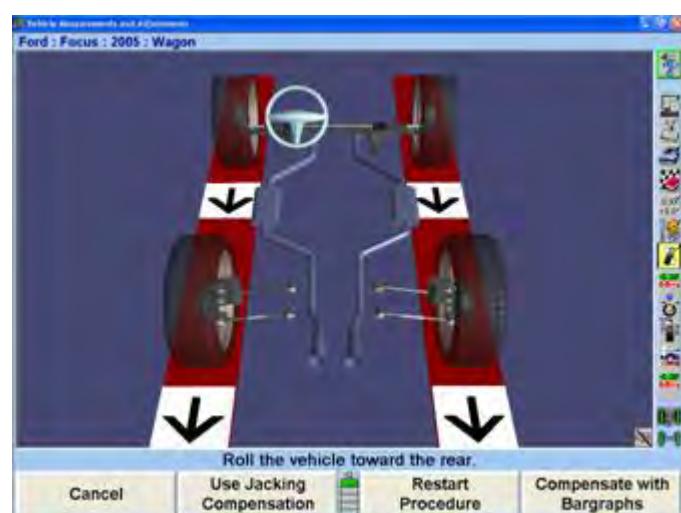
Using the pyrometer, test the temperature of each tire on the tread surface. Take three readings-one on the outside of the tread, one from the center of the tread, and one from the inside tread.



If the pyrometer is connected to the aligner the readings can be directly entered into WinAlign® Tuner, or the readings can be entered manually through the keyboard.



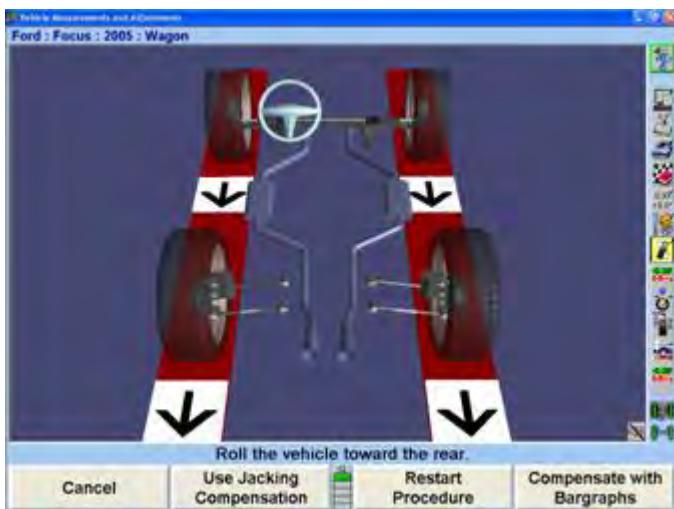
Mount sensors and compensate. Select "Continue".



Select "Check with ExpressAlign®" and make any necessary adjustments. If the tire temperature values are not consistent, Tuner will calculate further adjustments as illustrated by the ExpressAlign® menu.



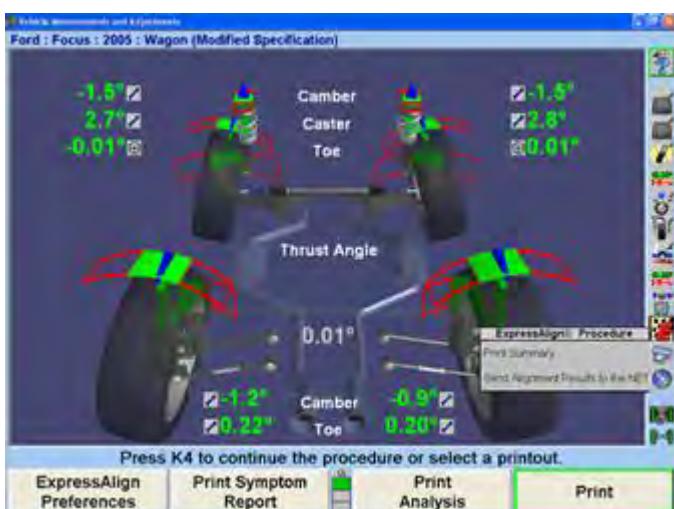
Make the adjustments as indicated and select, "Save After Measurements".



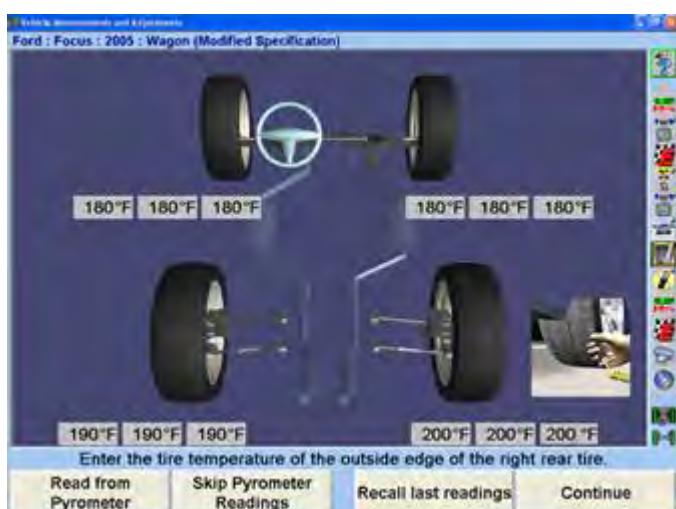
Select "Check with ExpressAlign®" and make any necessary adjustments. If the tire temperature values are not consistent, Tuner will calculate further adjustments. If the values are consistent all adjustments are completed. Select "Print" to print the desired alignment results.



Road Test the vehicle again according to the instructions above and re-test the tire temperatures. Select "Continue" after all readings have been entered.



The WinAlign® Tuner alignment procedure is completed. Select "Reset" to complete the process.



Mount sensors and compensate. Select "Continue".

4. Quick Check® Procedures

4.1. Quick Check® Overview

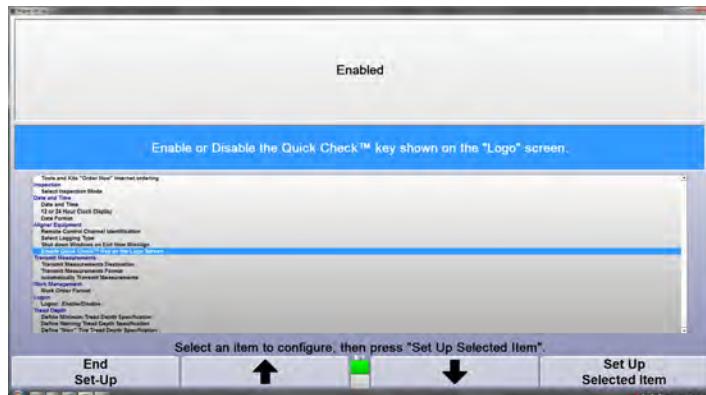
For WinAlign® version 14.3 or greater with the addition of a plus key, the alignment console can also perform Quick Check® procedures. If the appropriate accessories are also available, the following enhanced Quick Check® procedures can be done:

- Tire Health
- Battery Health
- Diagnostic Systems Check
- Quick Tread® Tread Depth System

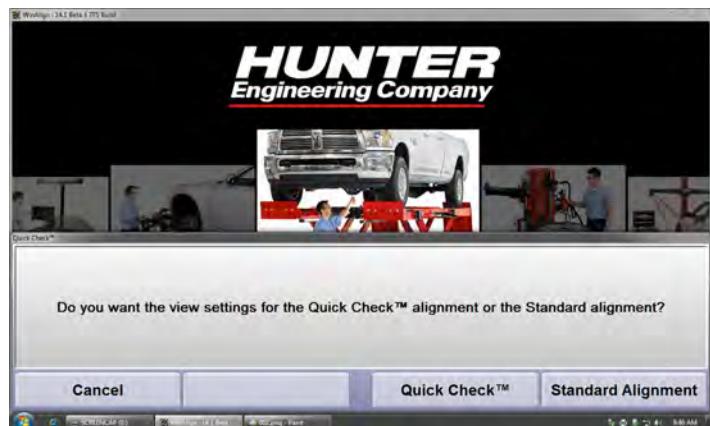
4.2. Quick Check® and Accessories Setup

The “Begin Quick Check®” option must be active to setup any optional accessories. To do this, in the setup menu, select “Enable Quick Check® Key on the Logo Screen” under the “Aligner Equipment” heading.

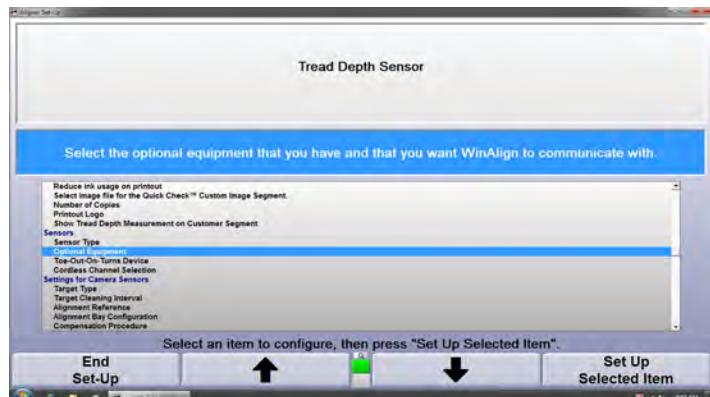
Press “Set Up Selected Item”, and enable the key. The begin Quick Check® key will appear on the logo screen.



Any optional accessories must first be enabled in order to have them available during the Quick Check® process. To do this, go to setup. The screen will ask which setting to view. Select the K3 Quick Check® key.



Once within the Quick Check® setup screen, select “Optional Equipment” under the “Sensors” heading.

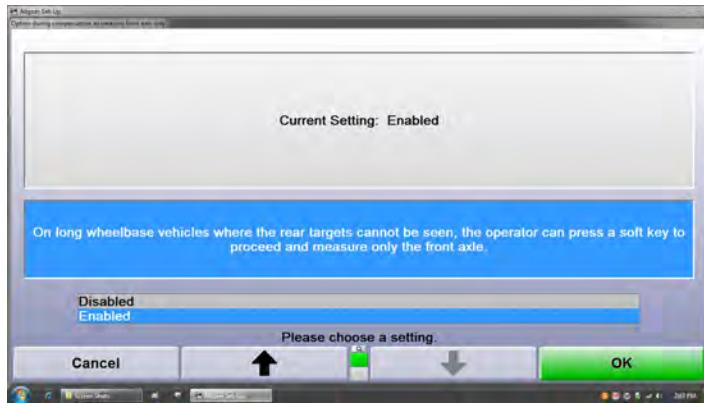


Select any equipment to be enabled. A checkmark will appear next to any item that is enabled.

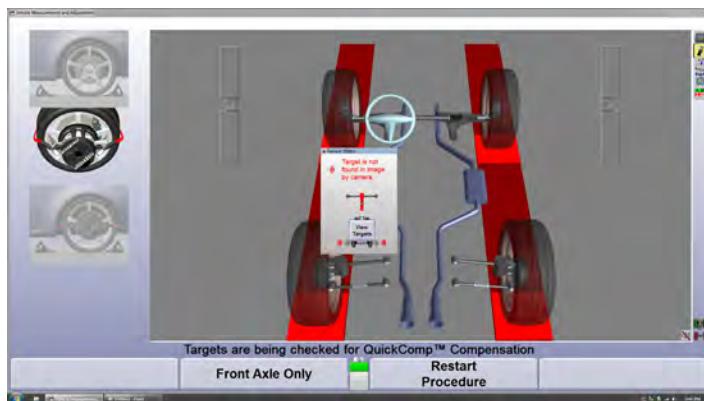


4.2.1. Quick Check® for Long Wheelbase Vehicles

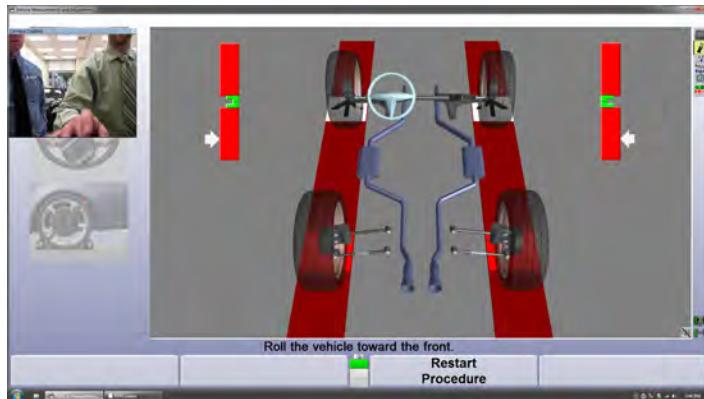
When using Hx421 DU targets, there is an option to measure the front axle only if the rear targets are out of the view of the cameras. Enable “Option during compensation to measure front axle only” in the Setup screen.



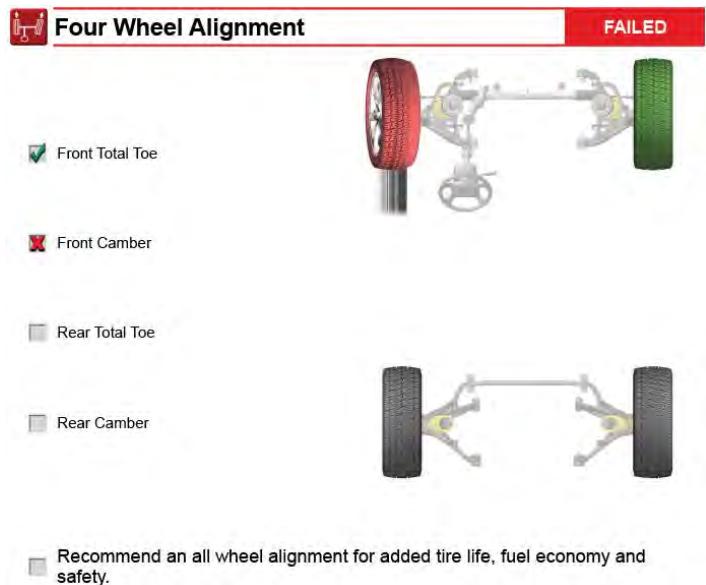
When this option is enabled a new softkey will appear on the compensation screen if no rear targets are detected by the cameras.



Select the "Front Axle Only" softkey on the compensation screen to allow compensation to continue even if the rear targets are out of the field of view.

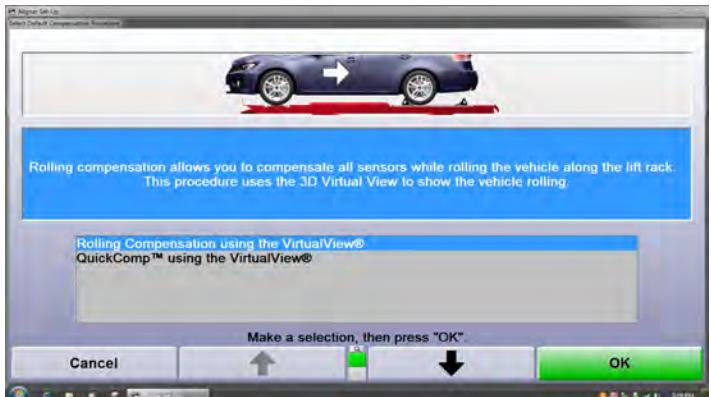


The Quick Check® printout will show information for three alignment angles: front total toe, right front camber and left front camber, information for the rear axle will be grayed out.



4.2.2. Standard Compensation Option

WinAlign® 14.3 and greater supports the use of a standard (roll back then forward) compensation procedure. This feature is most useful in situations where a single aligner console is used for Quick Checks® and alignments. It eliminates the need to change the position of the targets on the QuickGrip® adaptors when switching back and forth from alignment to Quick Check®.



4.2.3. Tread Depth Setup

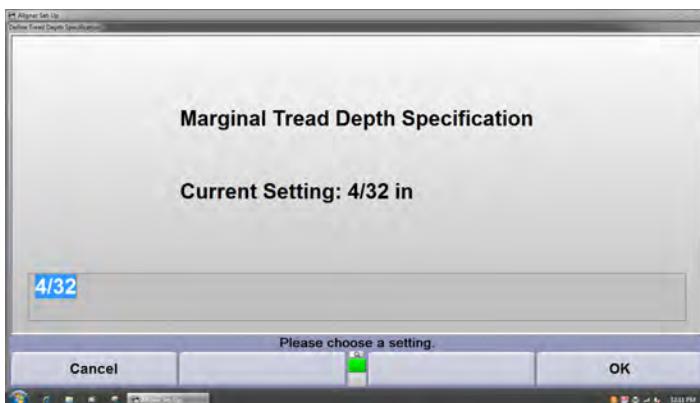
Due to the wide range of tire sizes and tread depths, the following specifications are generalized to fit the majority of tires. Specifications may need to be adjusted to fit the needs of each shop.

In the Setup menu, select "Define Tread Depth Specification" under the "Tread Depth" heading.

The general "new" tread depth is 12/32 (.375) inches. This number will appear green on a printout. This can be modified to fit the individual situation of each shop based on what types of wheels normally are checked.



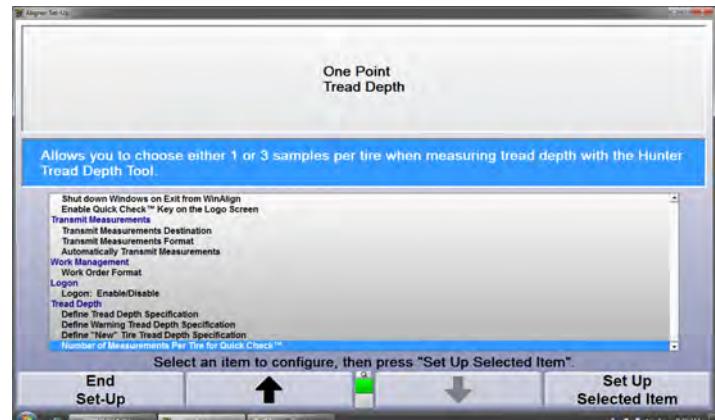
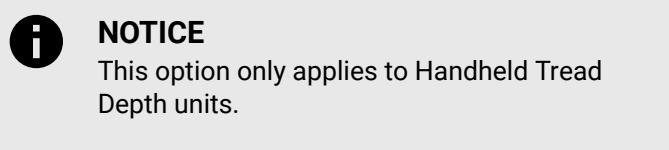
The general "marginal" minimum tread depth is 4/32 (.125) inches. When a tread depth measurement reaches this range the printout color will change from green to yellow.



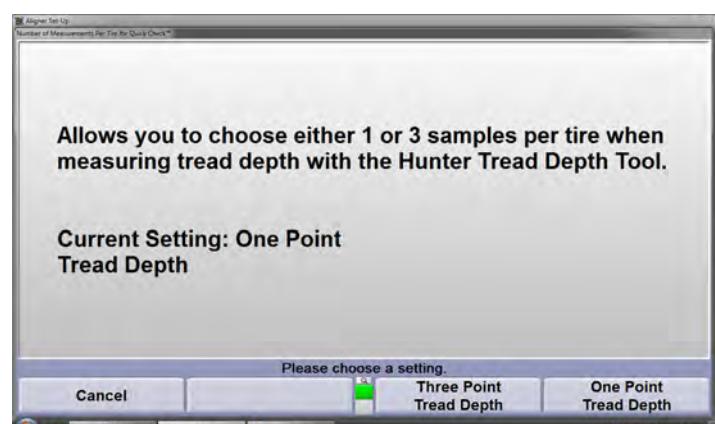
The general "failed" minimum tread depth is 2/32 (.0625) inches. When a tread depth measurement reaches this range the printout color will be shown as red.



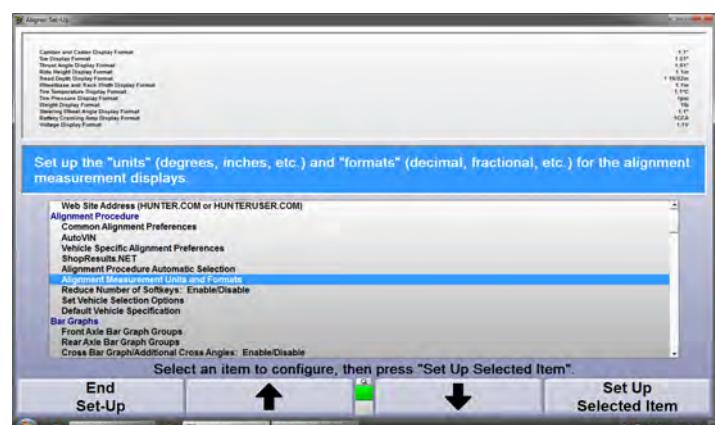
The number of tread depth measurement points per tire can be specified in setup as well. Select "Number of Measurements Per Tire" under the "Tread Depth" heading.



Select One Point or Three Point and select "OK".



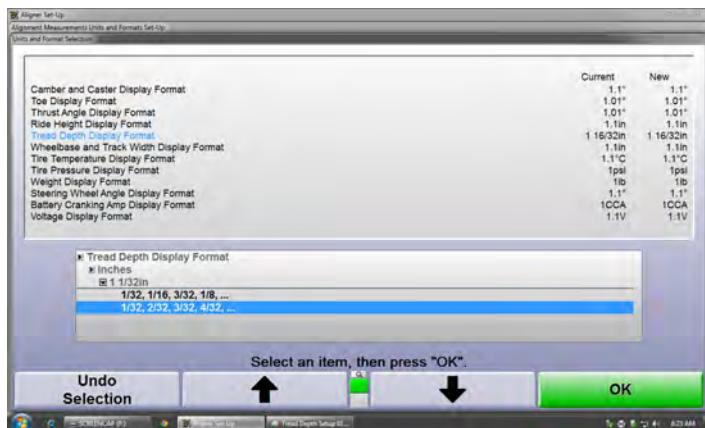
Tread depth measurement can be displayed in a number of formats including decimal and fraction. To change the display type, select "Alignment Measurement Units and Formats" under the "Alignment Procedure" heading. Select "Set Up Selected Item".



Select "Tread Depth Display Format". Select the desired unit measurement.



Select the desired display format. Select "OK".

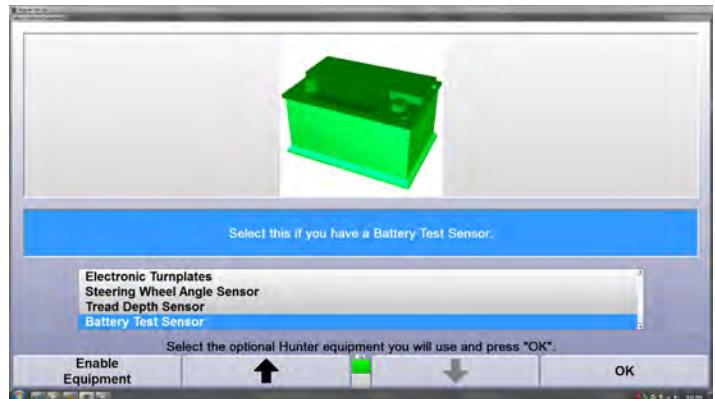


4.2.4. Battery Health and Diagnostic Systems Check Setup

The battery health tool measures the voltage and cold cranking amps of the battery and wirelessly sends the information to the console.

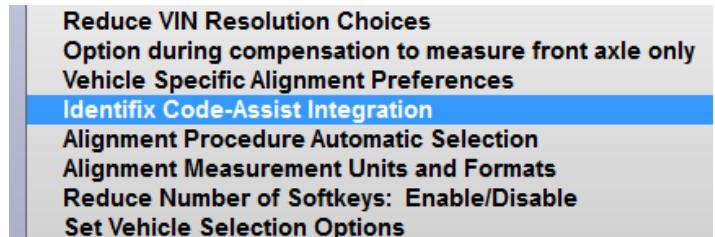
The Diagnostic Systems check uses the OBD-II connector and Codelink device to check the vehicles legislative fault codes. The codelink device can also be used to input information to the console such as vehicle mileage and tire PSI.

These two devices are setup by going to the "Optional Equipment" section under the "Sensors" heading.



4.2.5. Identifix Code Assist Integration

If enabled with an active Identifix® subscription, information regarding any DTCs found may be displayed at the end of the Quick Check®. Refer to appropriate documentation for detailed information regarding set up and use of this option.



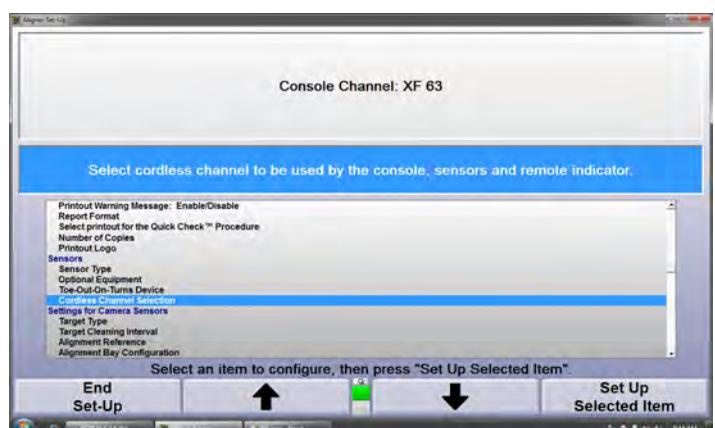
4.2.6. Changing Component Wireless Settings



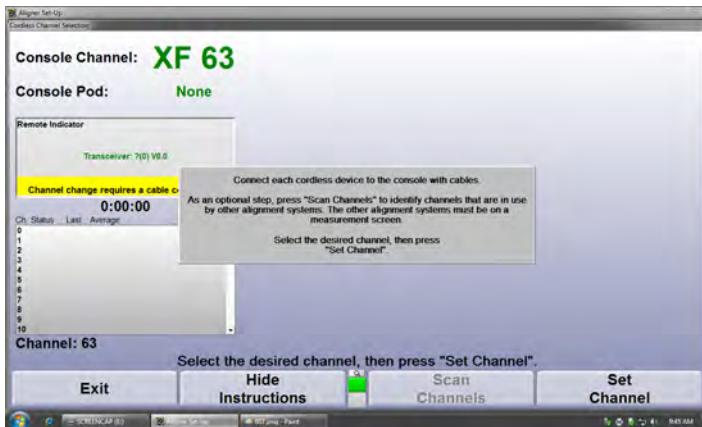
NOTICE

In most cases, the wireless channels should be correctly set from the factory. Use this procedure if there is a wireless channel conflict.

From the setup menu, under "Sensors", select "Cordless Channel Selection".



Wireless channels in use will be displayed. Press "Scan Channels" to identify channels that are in use. Select the desired channel, then select "Set Channel".



Use the following chart to set the wireless channel on the wireless device.

Battery Tester	Tread Depth	Channel	Freq (MHz)
S1	00		
S3	1 2 3 4	0	2405
S5			
S4			
S2			
S1	00		
S3	1 2 3 4	4	2410
S5			
S4			
S2			
S1	00		
S3	1 2 3 4	8	2415
S5			
S4			
S2			
S1	00		
S3	1 2 3 4	12	2420
S5			
S4			
S2			

Battery Tester	Tread Depth	Channel	Freq (MHz)
S1	00		
S3	1 2 3 4	16	2425
S5			
S4			
S2			
S1	00		
S3	1 2 3 4	20	2430
S5			
S4			
S2			
S1	00		
S3	1 2 3 4	24	2435
S5			
S4			
S2			
S1	00		
S3	1 2 3 4	28	2440
S5			
S4			
S2			

Battery Tester	Tread Depth	Channel	Freq (MHz)	Battery Tester	Tread Depth	Channel	Freq (MHz)																																																																																																																																								
S1	00			S1	00																																																																																																																																										
S3	1 2 3 4	32	2445	S5	1 2 3 4	48	2465	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2				S3	1 2 3 4	36	2450	S5	1 2 3 4	52	2470	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2				S3	1 2 3 4	40	2455	S5	1 2 3 4	56	2475	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2				S3	1 2 3 4	44	2460	S5	1 2 3 4	63	2480	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2			
S5	1 2 3 4	48	2465	S3	1 2 3 4																																																																																																																																										
S4				S5	1 2 3 4																																																																																																																																										
S2				S4																																																																																																																																											
S1	00			S2																																																																																																																																											
S3	1 2 3 4	36	2450	S5	1 2 3 4	52	2470	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2				S3	1 2 3 4	40	2455	S5	1 2 3 4	56	2475	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2				S3	1 2 3 4	44	2460	S5	1 2 3 4	63	2480	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2																																							
S5	1 2 3 4	52	2470	S3	1 2 3 4																																																																																																																																										
S4				S5	1 2 3 4																																																																																																																																										
S2				S4																																																																																																																																											
S1	00			S2																																																																																																																																											
S3	1 2 3 4	40	2455	S5	1 2 3 4	56	2475	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2				S3	1 2 3 4	44	2460	S5	1 2 3 4	63	2480	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2																																																																											
S5	1 2 3 4	56	2475	S3	1 2 3 4																																																																																																																																										
S4				S5	1 2 3 4																																																																																																																																										
S2				S4																																																																																																																																											
S1	00			S2																																																																																																																																											
S3	1 2 3 4	44	2460	S5	1 2 3 4	63	2480	S3	1 2 3 4			S4				S5	1 2 3 4			S2				S4				S1	00			S2																																																																																																															
S5	1 2 3 4	63	2480	S3	1 2 3 4																																																																																																																																										
S4				S5	1 2 3 4																																																																																																																																										
S2				S4																																																																																																																																											
S1	00			S2																																																																																																																																											

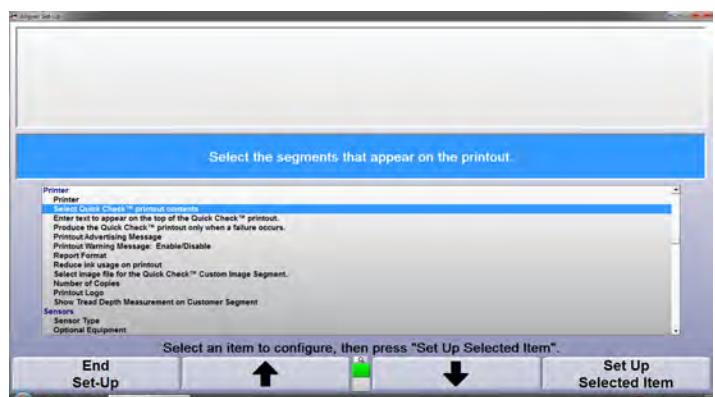
4.2.7. Quick Check® Printout Setup



NOTICE

Refer to the Quick Check® Printout Builder Guide, [Form 6982-T](#) for detailed instructions regarding printout setup.

Quick Check® printouts use a segmented style to generate a report based on what accessories were used during the Quick Check®. Two printouts can be generated, accommodating anywhere from one to six segments of information on each page. From the setup menu, under the "Printer" heading, "Select Quick Check® printout contents".



Select the segments to be displayed on page one and page two of the printout. Highlight a results segment and click

the “Add” or “Remove” action buttons next to the desired page to add or remove that information from the printout.



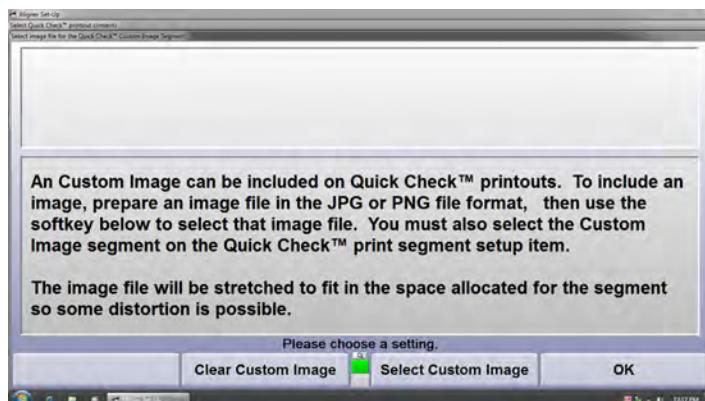
NOTICE

Clicking on any of the segments opens a preview of that segment in the lower left corner with a short description above.

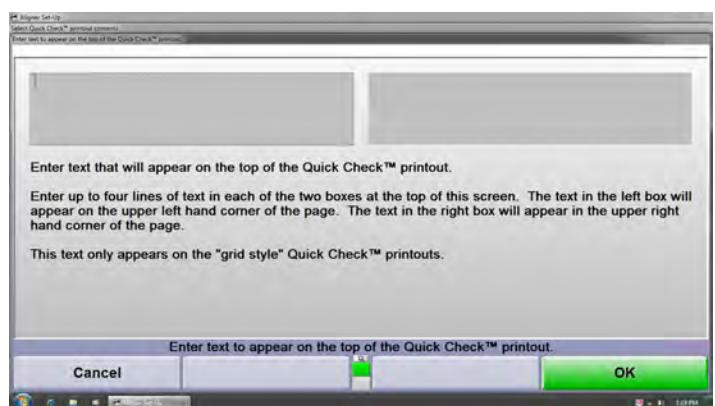


The segments can also be moved up or down on the printout using the action buttons. Select “Print Preview” to ensure the layout looks as desired before pressing “OK”.

Clicking the “Custom Image” button allows the user to choose a custom image to appear anywhere on the printout. The image must be in JPG or PNG format and it will fill the space allotted for the segment so some distortion is possible.



Select “Two Column Header” to enter up to 4 lines of text that will appear at the upper left and or right corners of the printout.

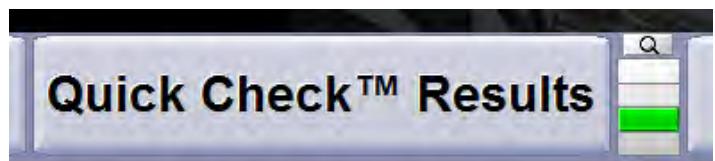


The “Print Logo” and “Advertising Message” setup is the same as it is in a standard alignment printout setup. Refer to [“Printer \[177\]”](#) for detailed instructions.

4.2.8. Quick Check® Results

Hunter’s Quick Check® Results program automatically organizes results from every Quick Check® performed. Conversion rates can be tracked and the results displayed by date range. The format is similar to ShopResults within HunterNet®, however all data in QC Results is stored locally on the console but can be printed, exported and edited as needed.

Quick Check® Results is accessed from the logo screen on the third row of softkeys.



For detailed instructions on using the Quick Check® Results program, refer to the Quick Check® Results 1.0 User Guide, [form 6825-T](#).

4.3. Quick Check® Procedure

The Quick Check® procedure on the aligner is similar to the standard sequence. Refer to the Quick Check® System Operation Instructions, [form 6606-T](#).

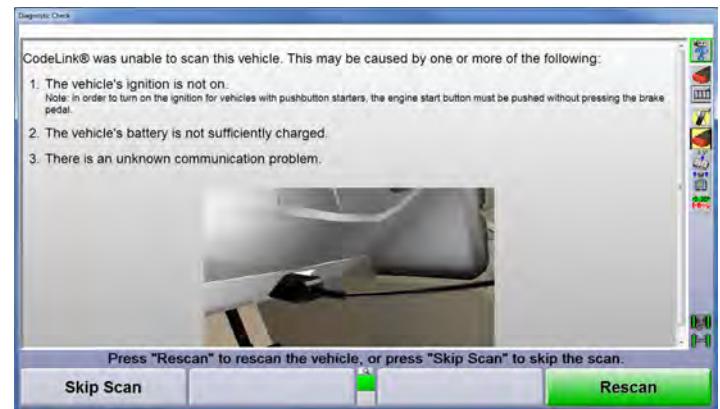
4.3.1. Diagnostic Systems Check

WinAlign® will prompt the user to connect the CodeLink device before the odometer entry step in the Quick Check® process. follow the on-screen instructions and select “Continue” to begin communication with the vehicle.



NOTICE

Selecting “Continue” without a CodeLink device connected will re-display the screen. Selecting “Skip Scan” with or without CodeLink connected will close the window and the Quick Check® process will continue as normal.



4.3.2. Battery Test Process



WARNING

Vehicle batteries contain acid and generate explosive gas while charging, wear safety glasses and use caution when working around batteries. Do not allow any metal to short across the battery terminals.

The battery tester has 4 status LEDs.



Power	Indicates the test leads are connected to a battery
Communication	Successful communication with the console receiver

At this point, if odometer entry is enabled under “Common Alignment Preferences”, enter the vehicle’s odometer reading using the CodeLink keypad.

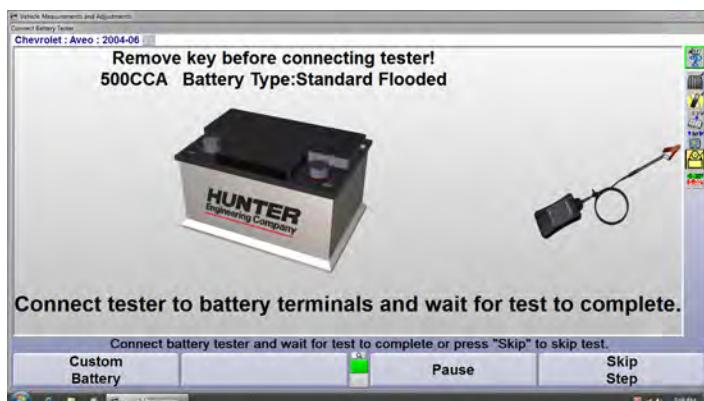
Otherwise, begin rolling compensation while the DTC information and VIN are pulled. If the diagnostic scan has not completed by the time rolling compensation is complete, the following screen is displayed.



If the scan is unsuccessful, a screen will appear prompting to either skip the test or rescan.

Error	Communication error between the Hunter radio board and the Midtronics board. This could indicate a bad connection between the two boards inside the tester, or a bad XF transceiver or main board
Reversed Polarity	Test leads are connected incorrectly. Reconnect the test leads making sure the red clamp is connected to battery positive and the black clamp is connected to battery negative

At the end of the Quick Check®, WinAlign® will automatically select the OE battery specifications. Verify the battery type and rating displayed on the screen are correct before connecting the test clamps. If necessary, select "Custom Battery" to enter custom battery specifications.



NOTICE
For some vehicles, a list may appear before the test proceeds prompting to select the correct battery according to model year, engine size and OEM battery rating.

Ensure there is nothing connected to accessory outlets, such as GPS units and device chargers.

Open the hood and locate the battery or the remote terminals according to the on screen instructions.

Remove the key from the ignition. For vehicles with push button start, make sure the vehicle is in the "Off" mode.

If equipped with keyless entry, press the lock button on the key fob twice to put the vehicle into "sleep" mode.



NOTICE

The tester can detect even small loads on the battery and may generate a "Noise Detected" error and prompt for a re-test.

Connect the tester clamps as indicated on the test screen, red clamp to battery positive (or positive remote terminal) and the black clamp to battery negative (or remote ground). The green power LED should light up.

Within 10 seconds the blue communication LED should light up indicating the battery test results have been sent to the console. If the test is not completed in 10 seconds, reposition the test clamps.

UNSUPPORTED VEHICLES

Due to Midtronics and/or manufacturers recommendations, some batteries cannot be tested at the remote terminals. For example, the Chevrolet Camaro, Cadillac CTS, Cadillac ATS & Cadillac XTS cannot be tested without disconnecting the battery from the vehicle.

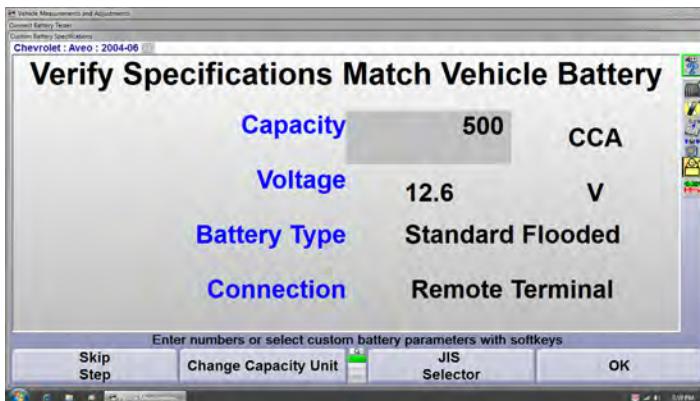
WinAlign® will briefly display a message that the vehicle selected does not support the battery test and automatically skip the step. A message is also included on the printout.



In some cases, only certain model year, special package, or dual battery vehicles do not support the battery test, in this case the selection screen will state whether or not the test is supported.

CUSTOM BATTERY SELECTION

If the vehicle is equipped with a battery type or rating that does not match the displayed values, select "Custom Battery" to enter different specifications.



If the vehicle is equipped with an aftermarket battery with a different capacity specification, enter the custom specification in the gray box. Select "Change Capacity Unit" from the first row of softkeys to choose a different rating unit, then enter the specification.

JIS SELECTOR (Japanese Industrial Standard)

JIS rated batteries have a 5 or 6 digit code embossed on the top of the battery.

Batteries with JIS (Japanese Industrial Standard) Number



Choose the JIS battery code from the list then select "OK", the capacity and battery type will be filled in automatically.

Most vehicles are equipped with "Standard Flooded" lead acid batteries, however high end aftermarket batteries and some OE batteries may be of the "Absorbed Glass Mat" or AGM type. Select the proper battery type from the second row of softkeys then enter the capacity specification.

Choose the type of testing connection from the third row of softkeys. Always test under the vehicle hood at either the battery terminals or the remote terminals. The test screen will indicate the proper location for OE vehicles.

4.4. Quick Check® Drive



NOTICE

ShopResults must be enabled in quiet mode (with or without printout images) in order for the system to return VIN numbers.

WinAlign® 16.0 and above supports the use of Quick Check Drive™ sensors in the Quick Check® procedure (WU series consoles only). Quick Check Drive™ is a completely unmanned inspection system. 32 lasers shoot onto the vehicle's tires. 8 camera sensors "see" the reflection of the laser and compute 16 total toe and four camber measurements. Outlying measurements are discarded, other measurements are averaged.

Cameras capture images of the license plate, determine the characters, then send those characters to a third party which then sends back the VIN number associated with that license plate.

Brand new plates, temporary plates, recently transferred plates and dealer plates will not return a valid VIN if they are not in this database. Vehicle year, make and model are then determined locally by the WinAlign® software according to the VIN number that is returned. This information is used to determine the specifications of the vehicle. WinAlign® compares measurements to specs. The results are calculated and displayed.

In the event the VIN cannot resolve the specs, gray bar graphs will be displayed. "Missing" results may be edited manually in HunterNet.

4.5. Quick Tread Edge®

WinAlign® 16.1 and above supports the use of Quick Tread Edge™ sensors in the Quick Check® procedure (WU series consoles only). The second generation of Quick Tread® can detect shoulder wear, in addition to the same measurement capability of the first generation machines.

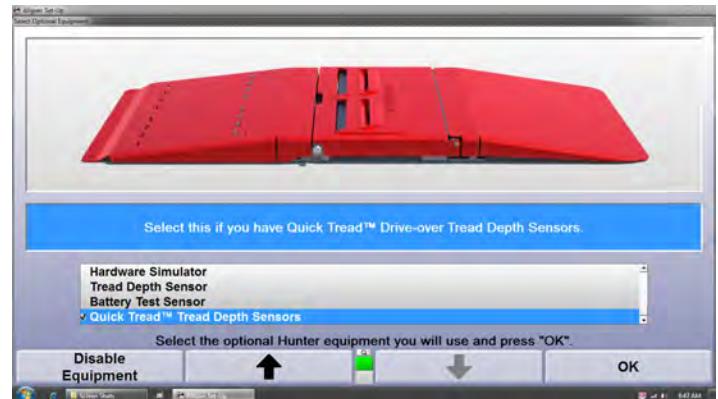
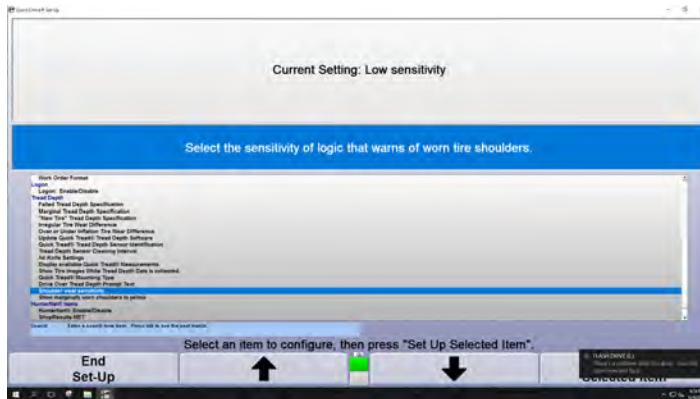
4.5.1. Unique Setup Items

Quick Tread Edge™ has two unique setup items to adjust the shoulder wear detection sensitivity and display options.



NOTICE

Quick Check Drive™ requires an active HunterNet account to be enabled in setup.

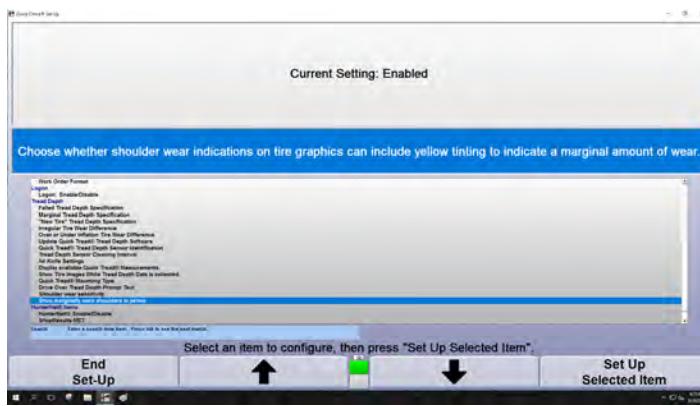


When Quick Tread Sensors are enabled, additional tread depth setup options become available.

- Irregular Tire Wear Difference
- Over or Under Inflation Tire Wear Difference
- Update Quick Tread Software
- Update Quick Tread Pedestal
- Quick Tread Sensor Identification
- Tread Depth Sensor Cleaning Interval
- Air Knife Settings

Irregular Tire Wear Difference

This setup option allows the shop to define a numerical value for the difference between measured inside and outside tread depths that is considered irregular on the Quick Check® printout. For example if the value is set to 2/32", a vehicle with excessive camber might show inside and outside readings of 8/32" and 6/32" respectively. This wear pattern would be displayed as irregular wear on the printout. The default value is 2/32".



4.6. Quick Tread Tread Depth System

WinAlign® 14.3 and above supports the use of drive over tread depth sensors during the Quick Check® procedure. Drive over tread depth is available only during the Quick Check® procedure, however if this console also performs alignments, the handheld tread depth tool can still be enabled and will work during alignments.

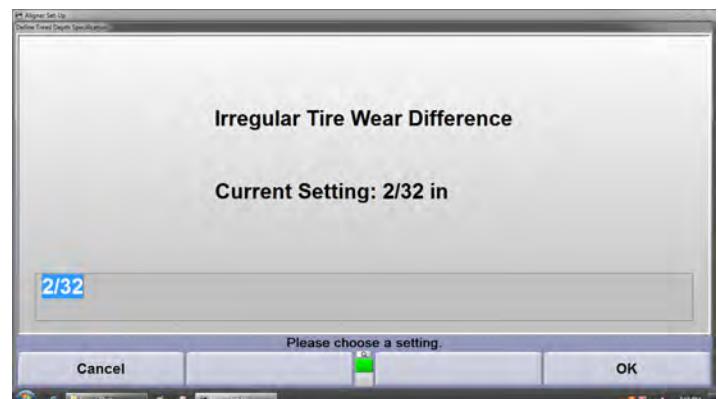


NOTICE

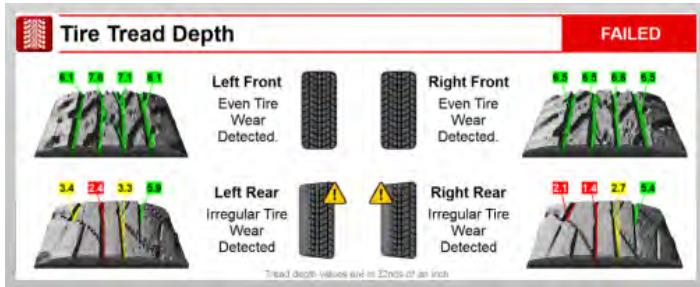
To ensure proper reporting for Quick Check®, please be sure to only enable either Quick Tread or HHTD under optional equipment but not both.

4.6.1. Setup

Enable Quick Tread Sensors in the “Optional Equipment” setup menu.

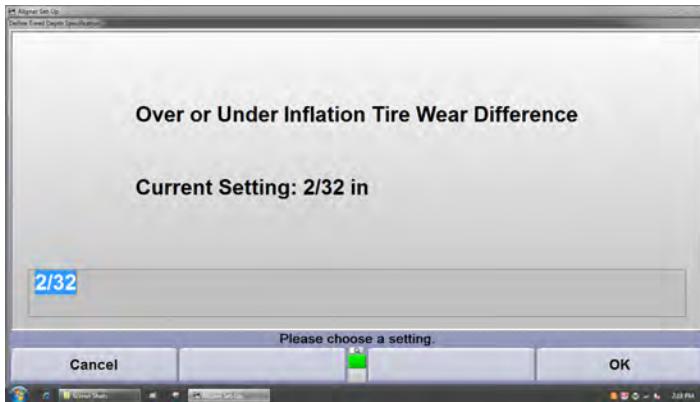


Printout example of a vehicle with irregular and over inflated tire wear patterns.



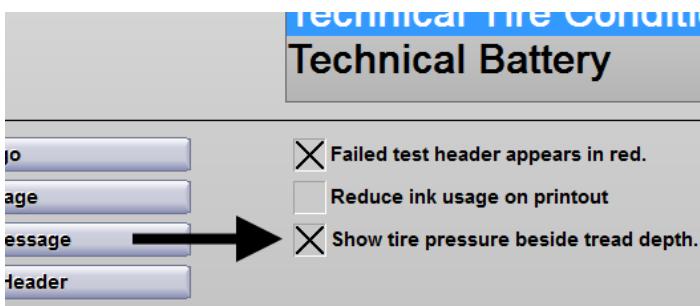
Over or Under Inflation Tire Wear Difference

This setup option allows the shop to define a threshold value between the center and the inside and outside shoulder of the tire that may be related to tire pressure. The default value is 2/32"



Tire Pressure Display

When equipped with Quick Tread and an Inflation Station (QCIS stands or brake tester), the before and after tire pressures may also be displayed next to the tire images by selecting "Show tire pressure beside tread depth" in the printout builder screen.



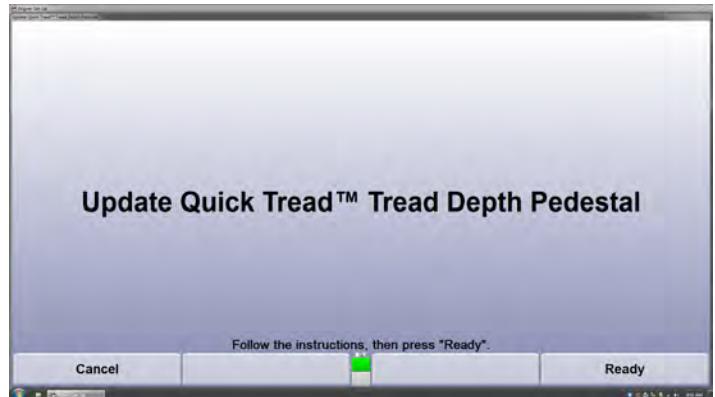
Update Quick Tread Software

This screen allows the user to update the software in the tread depth sensors. Follow the on screen instructions then press "Ready".



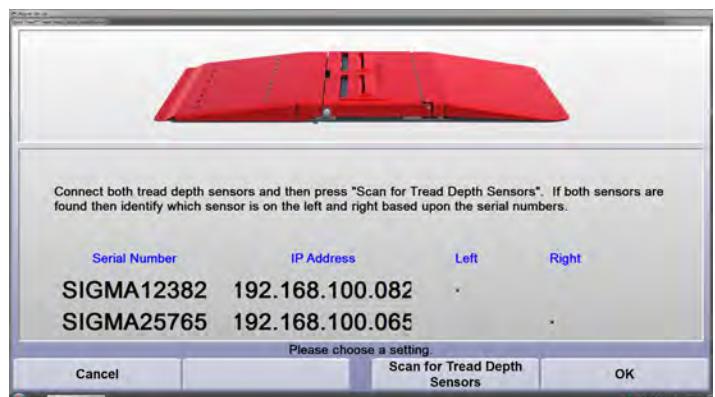
Update Quick Tread Pedestal

Use this screen to update the software on the DAQ board in the pedestal. Follow the on screen instructions then press "Ready".



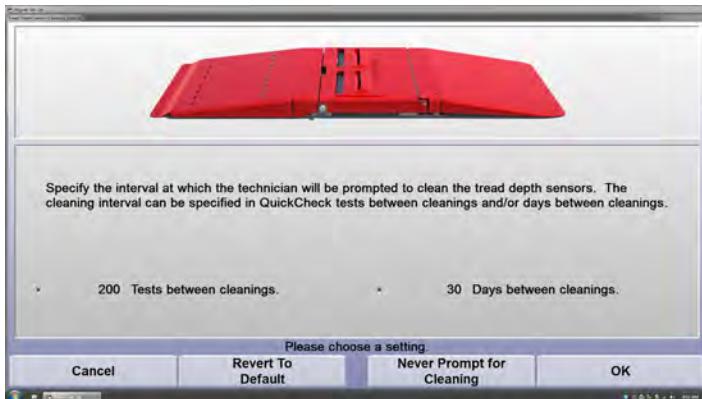
Quick Tread Sensor Identification

This screen displays the serial number, IP address and location of each sensor. The sensors can be physically identified using their serial number then matched to their corresponding location on the left or right ramp by clicking the selection boxes in the "Left" and "Right" columns.



Tread Depth Sensor Cleaning Interval

This setup option allows the shop to set automatic reminders to clean the tread depth sensors. The interval can be set according to the number of tests performed and/or days between cleanings.



Air Knife Settings

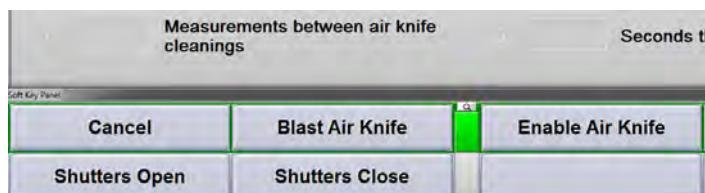
This setup item is used to set up the interval and duration on which the air knives operate. The air knives blow high pressure air across the laser and camera windows to clear off any water or debris that falls onto them. They can be configured to operate only after a specified number of tests and for a certain period of time.

Select "Enable Air Knife" then enter the number of measurements between cleanings and the duration of the cleanings in seconds. The feature can also be disabled if desired.

The solenoids operate sequentially. For example, if the duration is set to 5 seconds, one of the knives will operate for 5 seconds, stop, then the other knife will operate for 5 seconds. This is to ensure maximum air volume to each sensor's air knife.



The air knives and shutters can be manually operated from the setup screen as well.

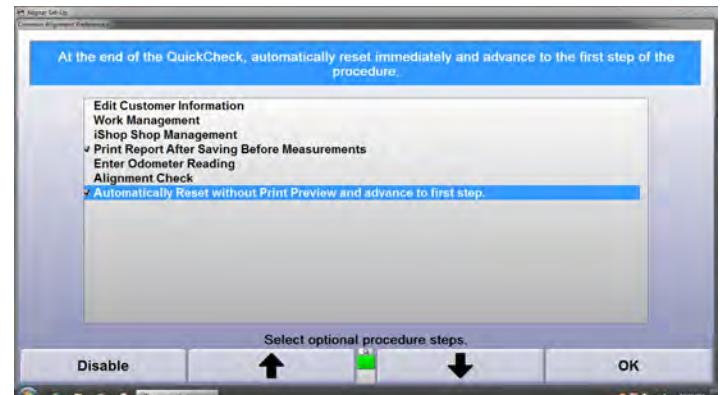


Optimizing the Stand Alone Quick Tread Procedure

Some setup options can be changed to optimize the process time between checks. These options include automatic reset and print failures only.

AUTOMATIC RESET OPTION

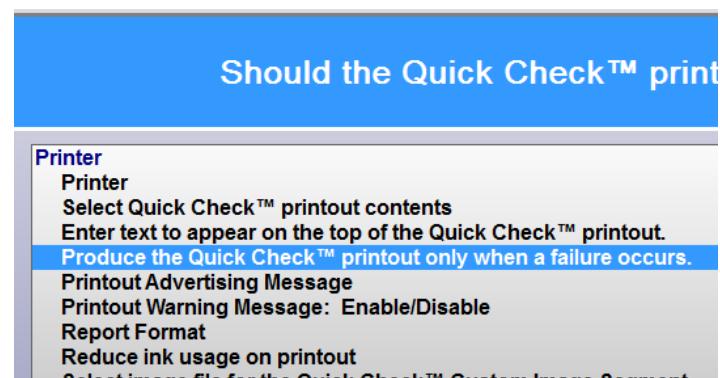
To produce a printout but skip the print preview screen, Enable Automatic Reset within "Common Alignment Preferences".



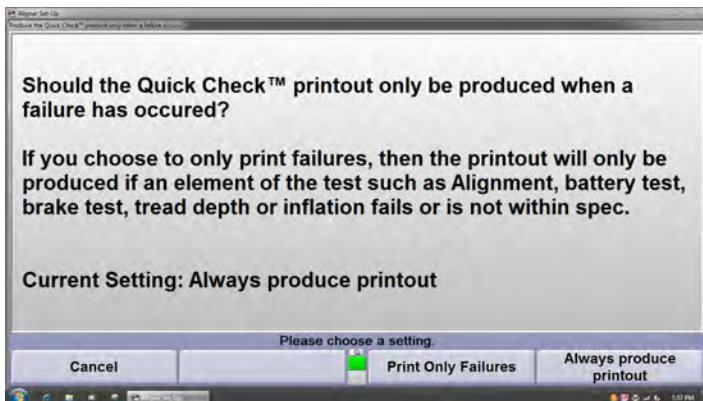
The system will reset and automatically advance to the test screen at the end of each test.

PRINT FAILURE ONLY OPTION

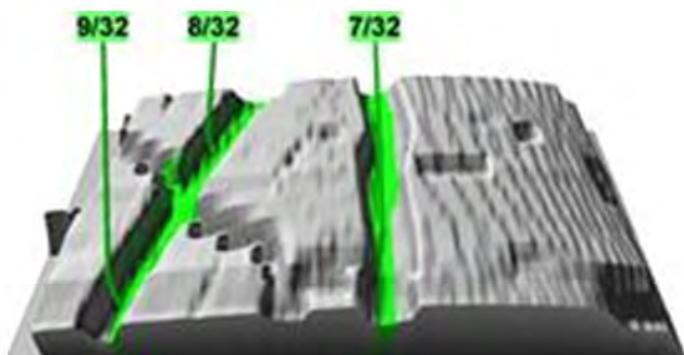
To produce a printout only when failures occur, select "Produce the Quick Check® printout only when a failure occurs" from the printer settings list in the setup menu.



Choose "Print Only Failures" from the row of K-keys, only test results with a failure(s) will be printed.



Intense Sunlight



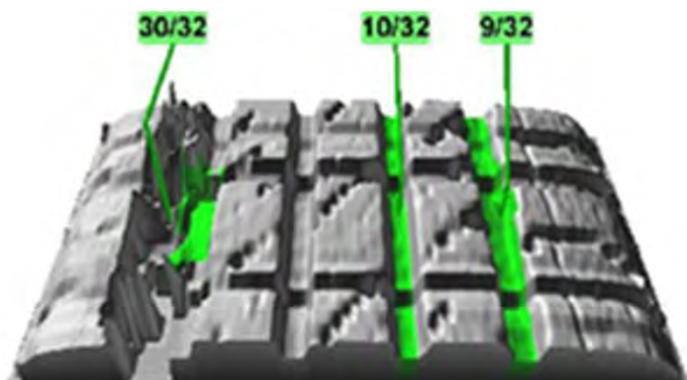
PRINTER QUALITY SETTINGS

Reducing the print quality from the printer settings menu will reduce the color saturation of the printout but will typically increase the speed at which it is generated.

4.6.2. Quick Tread Measurement Issues

Certain operating conditions may result in incorrect or missing tire tread data.

Debris on Sensor Windows



Large valleys in the tread rendering may indicate debris is stuck to that sensor window. The top plate opens up easily to allow cleaning of the sensor windows with blue glass cleaner and a soft rag.



WARNING

Never use solvents such as brake cleaner to clean the sensors. Never power wash the sensors.

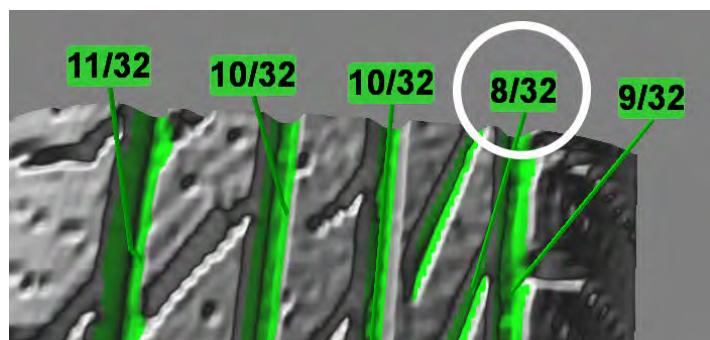
Intense sunlight shining into the sensor or onto the tire itself can cause the laser line to become washed out resulting in only a portion (or none) of the tire tread detected. If possible, lower or close bay doors to block out the sunlight.

Dual Rear Wheels

Quick Tread will only capture two of the tires on the rear axle of dually trucks. For example, it could capture either the inner or outer left rear tire and the inner or outer right rear tire. WinAlign® will display the tire which the software determines to be the clearest picture.

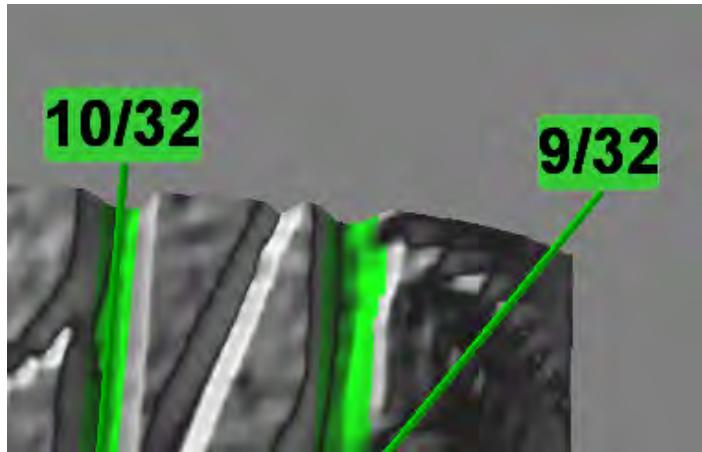
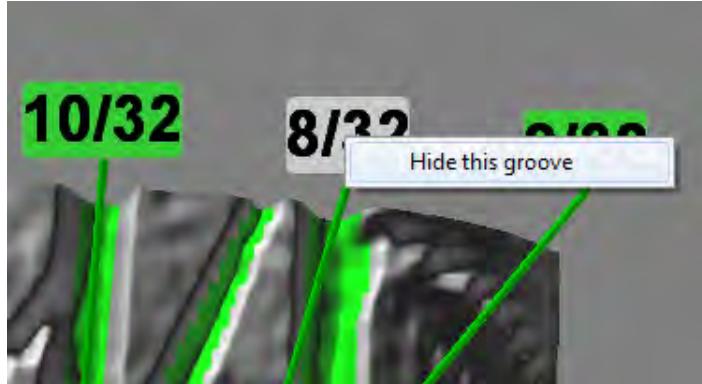
Hiding Measurements

Due to the wide variety of tire designs, the system may occasionally generate faulty measurements. For example, sipes may be measured and displayed, which are not an accurate representation of tread depth.



To hide a measurement, pause the process at the rendering screen and mouse over the false reading.

The box will turn gray, right click on the reading and select "Hide this groove". Multiple readings can be hidden in this manner.



To restore all measurements after hiding one or more, right click on any of the other measurements and select "Restore Grooves". All of the previously hidden measurements will be restored.



When satisfied with the results, exit the screen. The four images will flash as the new images are being saved. These new measurements will also be displayed on the printout.

4.6.3. Accessing the Sensors

The sensor cover plate is secured by a latch that is similar to many automotive hood latches. Locate the latch in the top of the cover plate.



Slide the latch toward the outside of the cover plate with one hand while lifting up on the plate with the other hand.



WARNING

The cover plate is heavy, use caution when opening and closing the plate. Keep hands and fingers clear of pinch points.



To close the cover, lower the cover with one hand while sliding the latch with the other hand.



WARNING

The cover plate will not close unless the latch is opened, do not drop the cover plate onto the latch or slam closed.



4.6.4. Quick Tread Operation

Drive the vehicle straight across the Quick Tread sensors at a speed of 2-8 mph (3.2-12.8 kph). Tread depths will be measured and the data sent to the console.



NOTICE

If the Quick Tread system is being used with a Brake Tester, drive the vehicle across at a speed of 4-8 mph (6.4-12.8 kph).



Position the vehicle for the next step, such as an alignment check, then proceed through the rest of the Quick Check® process.



4.7. Quick ID License Plate Recognition



NOTICE

Quick ID™ requires an active HunterNet account to be enabled in aligner setup.



NOTICE

ShopResults must be enabled in quiet mode (with or without printout images) in order for the system to return VIN numbers.

WinAlign® 15.0 and greater supports the use of the Quick ID™ license plate recognition system. The Quick ID™ camera captures an image of the license plate, determines the characters, then sends those characters to a third party which then sends back the VIN number associated with that license plate.

Brand new plates, temporary plates, recently transferred plates and dealer plates will not return a valid VIN if they are not in this database.

Vehicle year, make and model are then determined locally by the WinAlign® software according to the VIN number that is returned.

Refer to "[Quick ID™ Setup \[206\]](#)" for setup instructions.

4.7.1. Quick ID Confirmation Screen

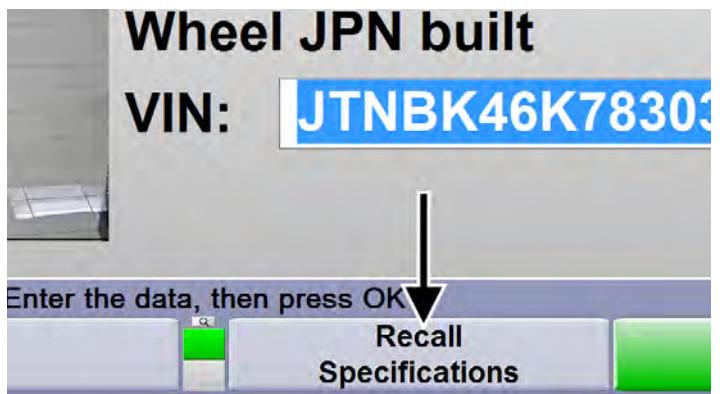
A confirmation screen will appear during the process in order to verify the correct license plate, locale and VIN.



NOTICE

This screen is defaulted to appear for 10 seconds before automatically advancing, press "Pause" (K1) or change the timer settings if this is not desired. See "Confirmation Screen Timer" on page 186.

The confirmation screen includes the license plate number, locale and VIN fields that can be edited if necessary.



NOTICE

If applicable, specific option packages may still need to be selected manually after the VIN is identified.

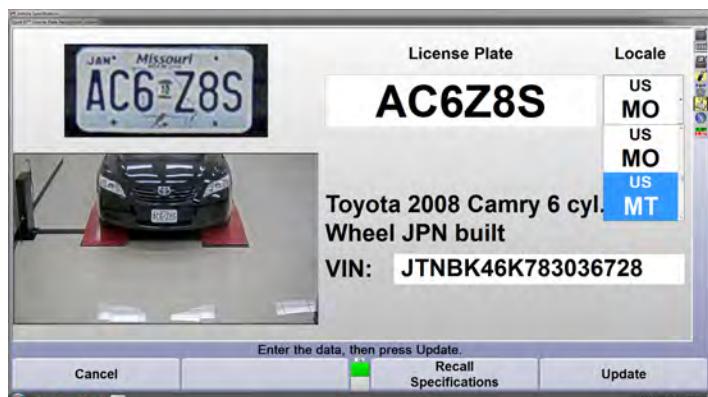
Verify the license plate characters, locale and VIN are correct. If necessary, edit the appropriate fields (Figure 518), then press K4 to continue through the Quick Check® process.

If a field has been edited, the K4 option will become "Update". Select "Update" once the data has been edited correctly.



NOTICE

The VIN field is highlighted initially on the confirmation screen. If necessary, this allows the VIN to be corrected via the bar code scanner without first deleting or highlighting the field manually.

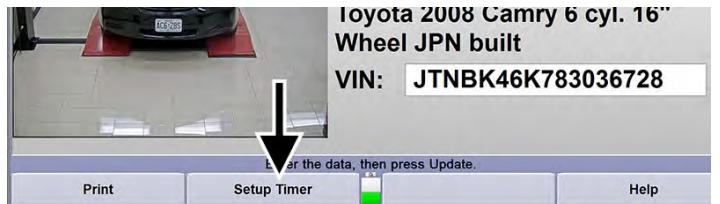


Pressing K4 on the confirmation screen advances to the next step.

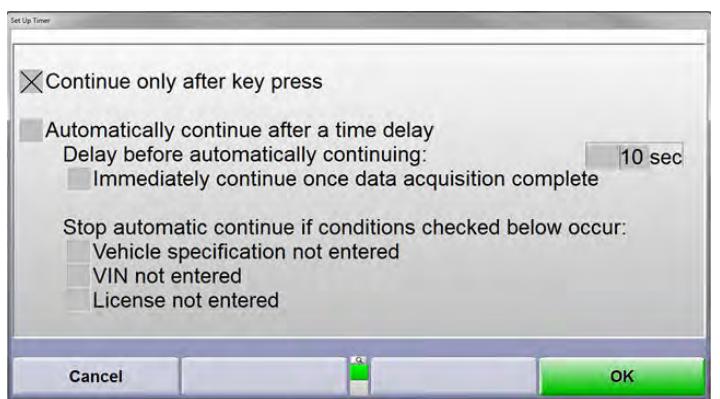
Vehicle information may also be recalled manually by selecting "Recall Specifications".

Confirmation Screen Timer

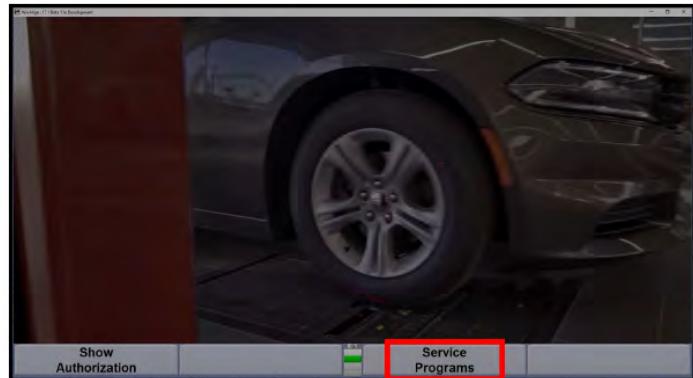
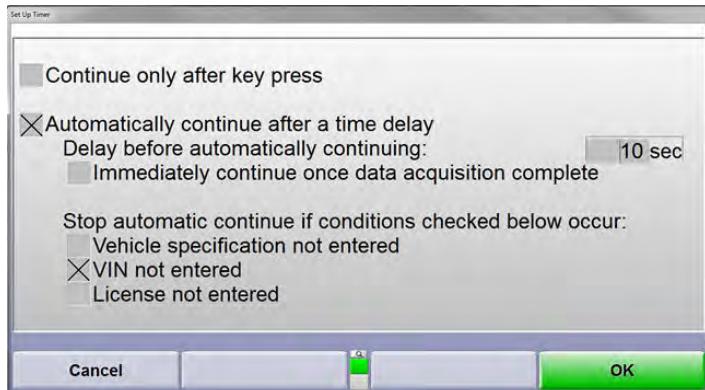
The confirmation screen timer can be changed by selecting "Setup Timer" from the second row of softkeys while on the confirmation screen.



The timer is defaulted to show the confirmation screen for 10 seconds before automatically advancing. This timer can be changed to suit the customer. The screen may also be set up to advance only by key press (K4), or set up to stop the automatic process whenever certain criteria exist. If an alignment check is being performed, it is recommended to select "Continue only after key press", since vehicle identification is necessary for determining alignment specifications.



If automatic operation is desired, it can be set up to stop only when certain conditions exist. For example many iShop integration partners require a VIN. Select the check box next to "VIN not entered" to ensure the automatic process does not advance without it.



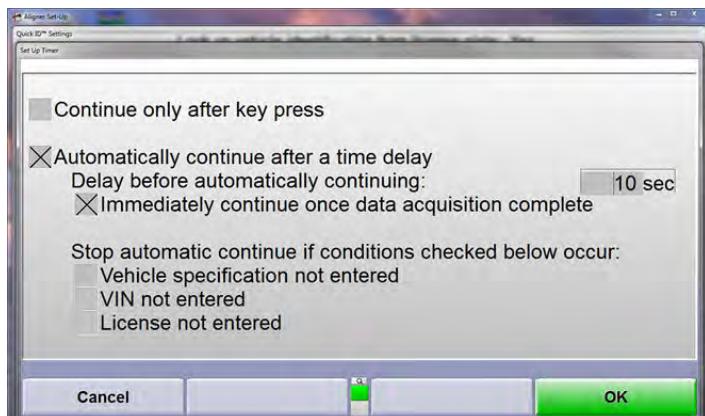
Unmanned Operation

Selecting "Immediately continue once data acquisition complete" will enable the software to advance immediately upon completing the VIN retrieval cycle.



NOTICE

Only enable this option when the system is intended for unmanned operation.



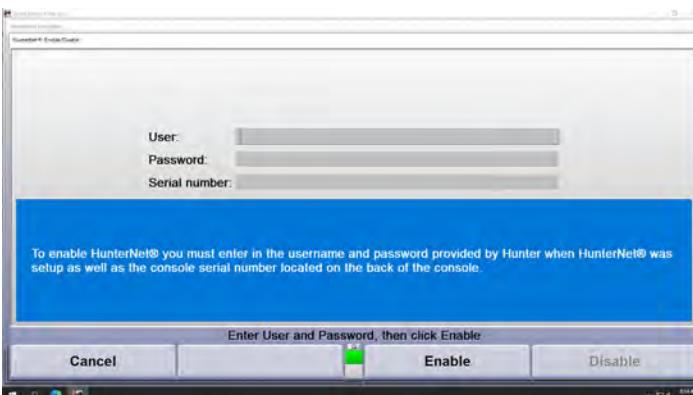
4.8. Hybrid Mode Setup

This section pertains to setting up the Passenger QCD system in conjunction with the Quick Tread Heavy Duty System to enable HD inspection with the Passenger QCD for Dually Wheels and Larger Tires.

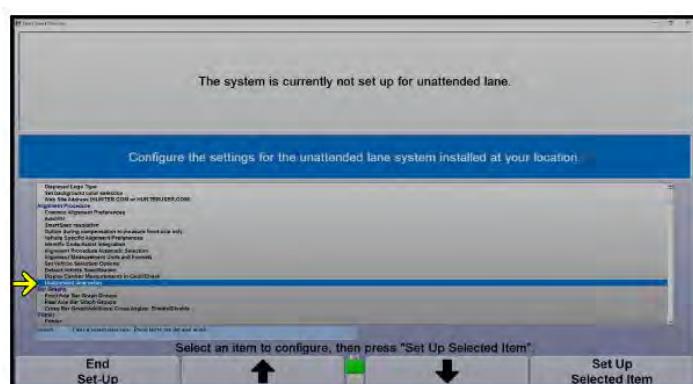
Brand new plates, temporary plates, recently transferred plates and dealer plates will not return a valid VIN if they are not in this database.

1. From the Main Screen Select Service Programs ► Quick Check Setup.

2. Login and Register the system.



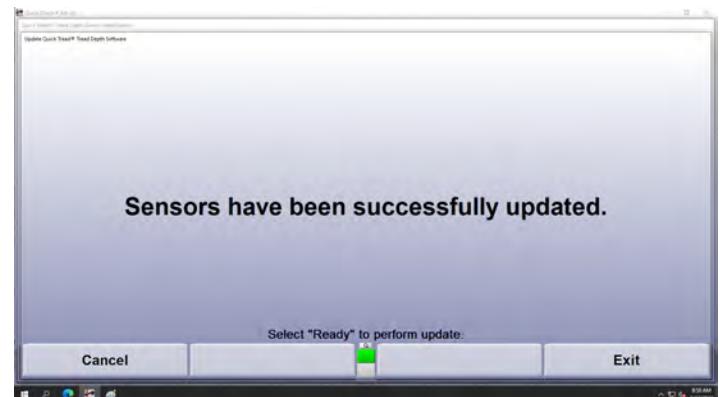
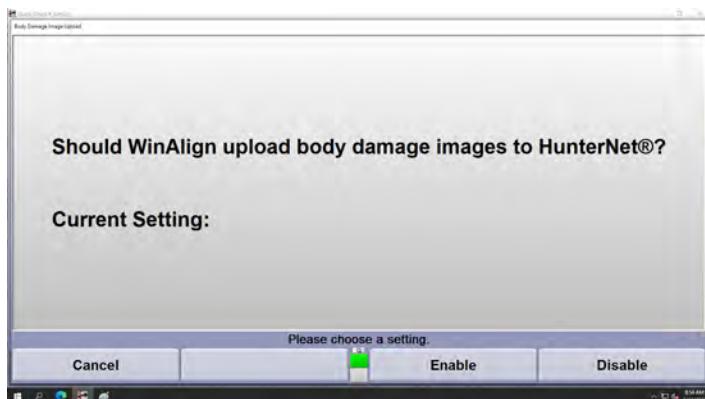
3. Enter the Unattended Lane Setup



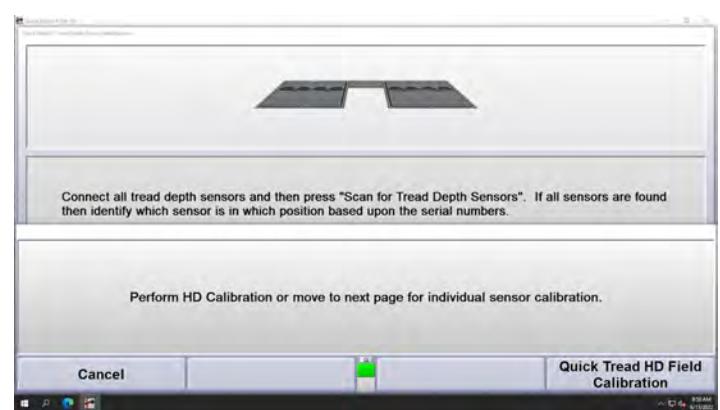
4. Select Unattended Lane Equipment. You will notice the new Quick Check® Drive, Quick Tread HD, and Quick ID external Camera selection. Highlight and click OK.



5. Enable Body Damage Settings.



6. Scan for Tread Depth Sensors and assign position based on serial number.

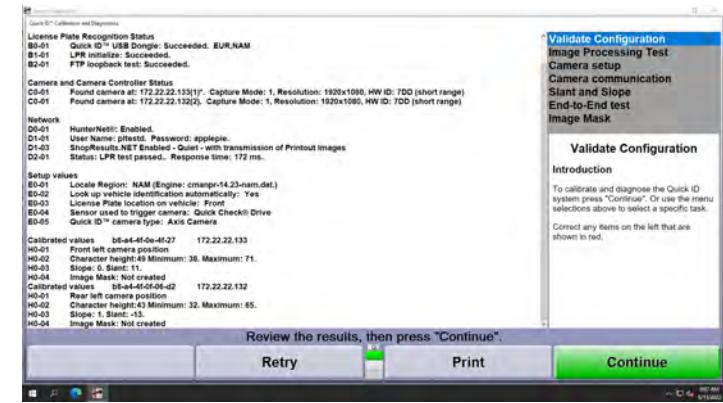
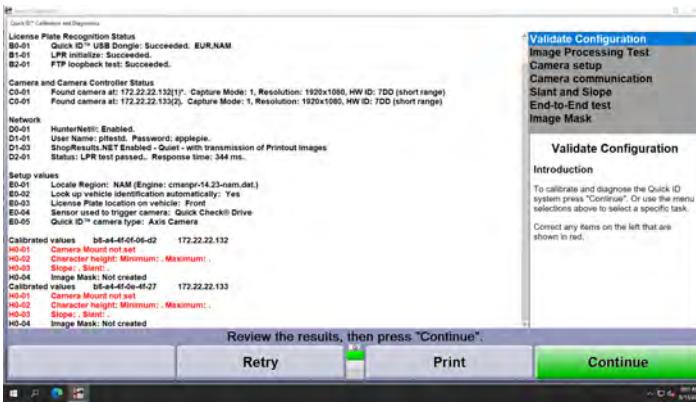


NOTICE

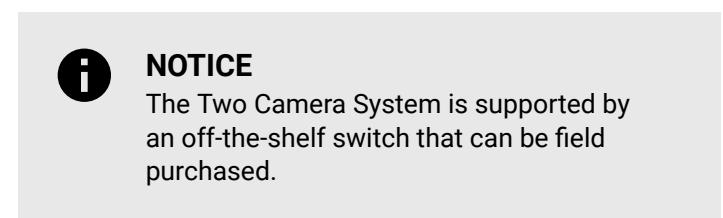
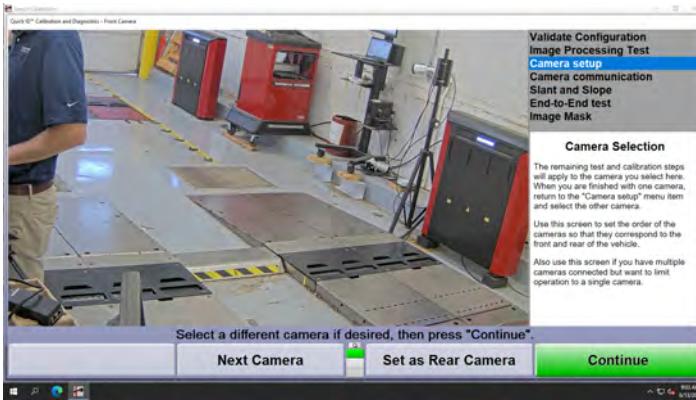
At this point you will see a pop up to update the sensors, this will only appear at the time of Initial Setup. Press OK to continue.

4.8.1. Dual Quick ID Camera Setup

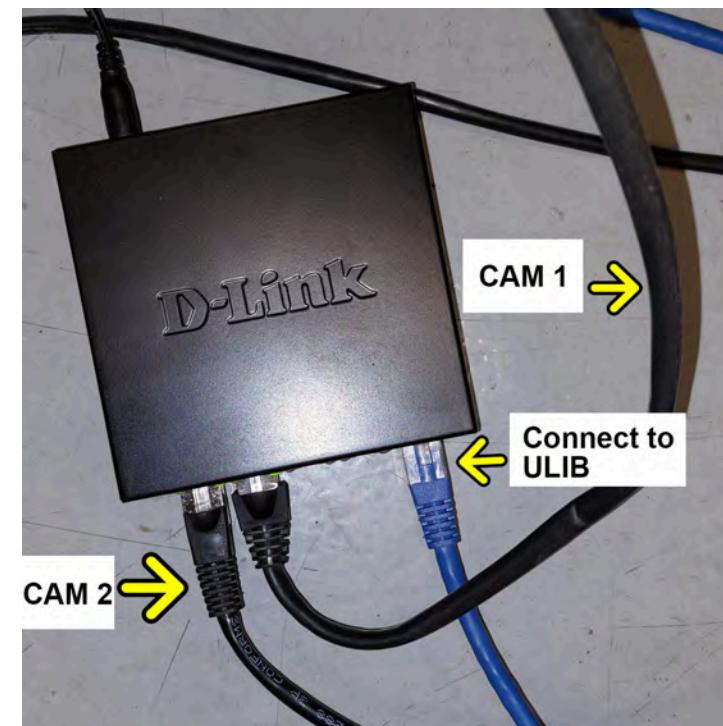
The Dual Quick ID Camera system is for use QCD/QTHD and QCHD/QTHD configurations.. There will be a front and rear ID camera. The NEW sensor Calibration screen will Highlight unfinished but necessary tasks in Red. These tasks will change to black upon completion.



You will notice 2 cameras listed under controller status as well as 2 sections for Calibrated Values. Press Continue to Proceed Camera setup will now show a Next Camera button and a Set as Rear/Front Button. During camera setup ensure you have the correct camera selected when labeling.



Camera mounting position select the camera position and proceed with procedure Press contiue and follow on screen prompts for Slant and Slop, End-toEnd, and Mask.

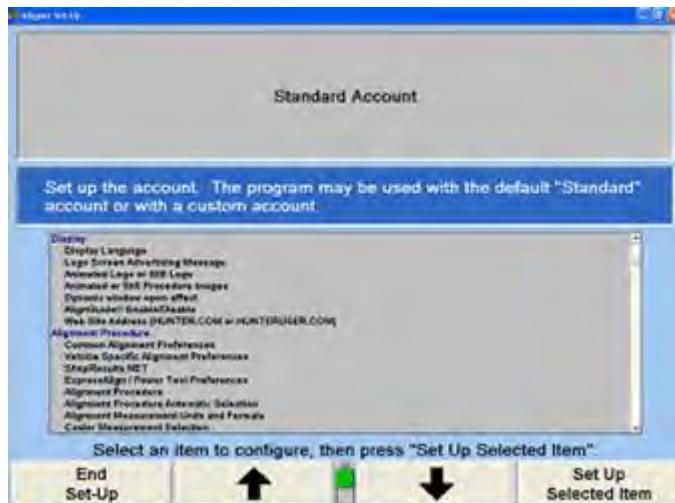


Once Camera Calibration is complete you will return to the sensor calibration screen and see that the Tasks previously in red now show in black as long as all steps have been completed.

5. Aligner Set-Up

5.1. Set-Up

The aligner can be configured to meet many different operating needs. For example, the "Customer Identification" screen can be removed from the prompt sequence so it does not automatically appear at the beginning of the alignment process, but is still accessible through the menu selection. Other selections such as the default alignment procedure can be set. The Set-Up selections are stored on the hard drive and recalled each time the program needs them. Modify Set-Up by pressing "Service Programs" on the logo screen. The menu labels will change. Press "Set-Up Aligner" and the "Aligner Set-up" primary screen will appear.



The current settings can be saved to disk or printed. To access these settings along with WinAlign® technical information press CTRL+Shift+K1. The "Version" screen may take several seconds to appear. Select "Print" to print all the settings and WinAlign® information.



The information in Set-Up can only be restored manually.

5.1.1. Factory Settings for Aligner Set-Up



NOTICE

Some setup menus will not be visible until that equipment is enabled in the "Optional Equipment" or "Sensor Type" setup menu.

Program/Account

WinAlign® / WinAlign® HD	✓	WinAlign®
Account	✓	Standard
Alternative Setup Configurations	✓	Factory Default

Display

Display Language	✓	English
Logo Screen Advertising Message	✓	Blank
Displayed Logo Type	✓	Animated Logo
		Active Logo
		Still Logo
Animated or Still Procedure Images	✓	Animated Images
AlignGuide Enable/Disable	✓	Enabled
Set background color selection	✓	Button - Silver Blue
	✓	Inset - Light Gray
	✓	Background - Silver Blue
Website Address	✓	HunterUser.com
	✓	Hunter.com

Alignment Procedure

		✓ = Default Items
--	--	-------------------

Common Alignment Preferences		Edit Customer Information at Beginning of Alignment	Vehicle Specific Alignment Preferences		Ride Height Information
		Edit Customer Information after Caster	ExpressAlign Preferences/Power Tool Preferences		Level III
		Work Management	Alignment Procedures	✓	ExpressAlign Total Alignment with Power Tools
		iShop Shop Management			4-Wheel Total Alignment
		Use Workshop Network Management			Thrust Line Alignment
		WinAlign® Tuner (Modified Vehicle)			Self-Directed 4-Wheel Alignment
		Display of Vehicle Specifications	Alignment Procedure Automatic Selection		Confirmation required before switching procedure
		Vehicle Inspection		✓	Automatically switch to Recommended Procedure
		Tire Information			Do not switch to recommended procedure
		Ride Height Measurements	Alignment Measurement Units and Formats		
		Show Measurement Display after Compensation	Camber and Caster Display Format		Degrees
		Show Measurement Display after Caster	Toe Display Format		Degrees
		Print simplified symptom report after compensation	Thrust Angle Display Format		Degrees
		Print Report after saving before measurements	Ride Height Display Format		Inches
		Advanced Vehicle Handling Values	Tread Depth Display Format		Inches
		Display Compensation Instructions	Wheelbase and Track Width Display Format		Inches
		Set Steering Wheel Level Status when measurements are saved	Tire Temperature Display Format		Degrees Celsius
	✓	Verify Caster Adjustment	Tire Pressure Display Format		PSI
AutoVIN		Enabled	Weight Display Format		lbs
			Battery Cranking Amp Display Format		CCA

Voltage Display Format		Volts
Caster Measurement Selection		Caster Only
	✓	Faster Caster (Caster and SAI/IA)
		Faster Caster Only
		SAI/IA Only
		Faster Caster/SAI/IA/Toe-out-on-turns at 20°
		Caster/Toe-out-on-turns at 20°
		SAI/IA/Toe-out-on-turns at 20°
Reduce Number of Softkeys	✓	Show All Softkeys Available (Disabled)
		Reduce Number of Softkeys
Set Vehicle Selection Options	✓	Selection Sequence: Optimal
		Selection Sequence: Year > Manufacturer > Model
		Selection Sequence: Manufacturer > Year > Model
		Selection Sequence: Manufacturer > Years and Model
Default Vehicle Specification		None (Choose vehicle specification every time)
Jack Detect	✓	Disabled
		Enabled

Bar Graphs

Front Axle Bar Groups	✓	Camber, Caster Adjust and Toe
	✓	Camber, Caster, Total Toe and Steer Ahead

	✓	Camber, Caster Adjust, and SAI
Rear Axle Bar Groups	✓	Camber, Toe, Total Toe, and Thrust Angle
Cross Bar Graph/ Additional Cross Angles: Enable/Disable	✓	Enabled
Show Specs on Bar Graphs: Enable/ Disable	✓	Enabled

Printer

	✓ = Default Item
Printer	(System Default Printer)
Print Language	English
Printout Advertising Message	Blank
Print Warning Message Enable/Disable	✓ Enabled
Report Format	✓ Standard Format
Default Printout	Vehicle Before and Current
	Custom Print Header
Print Preview	Disabled
CodeLink® DTC's on Printout	Disabled
Number of Copies	Print 1 Copy
	Print 2 Copies
	Print 3 Copies
	✓ Use Operating System Setting
Print Selector Printout List	✓ Enabled
Printout Logo	Blank
Currency	✓ USD (\$)

Sensors

Sensor Type	✓ = Default Item
	DSP706
	DSP708
	DSP600
	DSP600L

	DSP600LP
	DSP600CM
	DSP600DT
	HS201
	HS201L
	HS201CM
✓	Hx421
	Hx421L
	Hx421CM
	Hx421DT
	Hx421DT50
	Hx421DU
	HS221
	HS221L
	HS221CM
	HS221DT
Optional Equipment	Remote Indicator
	CodeLink®
	Fully Integrated Alignment
	Touch Remote™ for the ipod Touch® and iPhone®
	Hardware Simulator
	Tread Depth Sensor
	Battery Test Sensor
Toe-Out-On-Turns Device	None
	Mechanical Turnplates with steer angle scales
	DSPxxx-Series Sensors
	✓ Camera Sensors
Update Remote Indicator Software	Remote Indicator requires version "2.3"
Cordless Channel Selection	Console Channel: 63 (default channel)
Update CodeLink® Software	

Settings for Camera Sensors

	✓	= Default Item
Target Type		HiDef Targets®
		Standard Hexagonal Targets®
	✓	TD Targets® with QuickGrip® Adaptor
		TD Targets® on Shaft
		Wide Angle TD Targets® on Shaft
		Wide Angle TD Targets® with QuickGrip® Adaptor
Target Cleaning Interval		25 Alignments / 30 Days
Alignment Reference	✓	Runway Reference Plane
		Live Reference Plane
Ride Height During Roll		Disabled
Alignment Bay Configuration		Any lift with 1 turnplate position at standard distance
Compensation Procedure	✓	Rolling Compensation
		QuickComp®
		Jacking Compensation
		Rolling Compensation Using VirtualView
Push From Left Side or Right		QuickComp® Using VirtualView
		Left Rear Wheel
Emitter Flash Mode		Right Rear Wheel
	✓	Flash During Alignment
Lighting Mode		Flash Always
	✓	Standard Mode
		Bright Light Mode

Calibration Check Reminder	Remind at 30 Days
	Remind at 90 Days
	Remind at 180 Days
	Remind at 360 Days
	✓ Never Remind
RackTrack™ Selection	Manual Operation
	Automatically Track Targets®
	Automatically Track Rack Height

Fully Integrated Alignment Options

Inflation Station Auto Close		Auto Close at Target Pressure
Air Hose Warnings		Disabled

Power Tools

Rear Shim Default Brand		Hunter
Rear Shim Display Size		
Front Bushing Default Brand		Hunter
VirtualView® Enable/Disable		Disabled
VirtualView® Caster Steer		Enabled
VirtualView® WinToe		Enabled
Live or Manual Ride Height		Manual Entry Ride Height
Tools and Kits Order Now Internet Ordering		Enabled
TPMS Enable/Disable	✓	Enabled

Inspection

	✓	= Default Item
Select Inspection Mode		Part List Inspection
	✓	Point and Click Inspection Mode

Date and Time

Date and Time	Current date and time
---------------	-----------------------

12 or 24 Hour Clock Display	12 Hour Clock Display
Date Format	MM/DD/YY

Aligner Equipment

	✓	= Default Item
Remote Control Channel Identification		Remote Control channel setting: A, 0
Select Logging Type		No Logging
	✓	Statistical Logging
		Full Logging
Automatic Reboot of Windows	✓	Disabled
		Enabled
Shut down Windows on Exit from WinAlign®		Disabled
Enable or Disable the Quick Check® key shown on the "Logo" screen		Disabled

Transmit Measurements

Transmit Measurements Destination	Transmit Measurements to a file.
Transmit Measurements Format	Partial Measurements C111 Audit Format A
Automatically Transmit Measurements	

Work Management

Work Order Format	Format 1
	Format 2
	Format 3
	Format 4
	iShop Shop Management
	✓ Custom Forms

Logon

Logon Enable/Disable	Disabled
Logon Registry	N/A
Logon Password	N/A

Automatic Backup Options	Keeps backups for two days. Overwrite oldest backup. Backup path C:\Backup.dat
--------------------------	--

Tread Depth

	✓	= Default Value
Failed Tread Depth Specification	✓	2/32 in. (1.6 mm)
Marginal Tread Depth Specification	✓	4/32 in. (3.2 mm)
"New Tire" Tread Depth Specification	✓	12/32 in. (9.5 mm)
Number of Measurements Per Tire	✓	1 Point

HunterNet® Items

HunterNet®: Enable/Disable	✓	Disabled
ShopResults.net®		Enable
HunterNet® Data Collection	✓	Disabled
Send ShopResults after compensation	✓	Disabled
Computer Network Routing		Wired
		Wireless

The "Aligner Set-Up" primary screen provides a list box of Set-Up items. Press \uparrow or \downarrow to highlight the desired selection. When an item is highlighted, the current setting appears on the screen, along with an explanation of the item. Press "Set-Up Selected Item" to open the pop-up screen to Set-Up the highlighted item.

To move from a major heading to another major heading, press $\uparrow\uparrow$ or $\downarrow\downarrow$ from the second tier of softkeys. The following is a list containing all the Set-Up options including options using Digital Video.

Press "End Set-Up" after all the desired changes have been made to exit Set-Up and save changes.

5.2. Display

Setting up the display provides standard language options, customized logos and messages, and various viewing options.

5.2.1. Setting Up the Display Language

The Display Language identifies the language that appears on the screen displays. This selection will not change the language used in the printouts.

When "Display Language" is selected, the "Display Language" pop-up screen appears with the current setting on the screen.

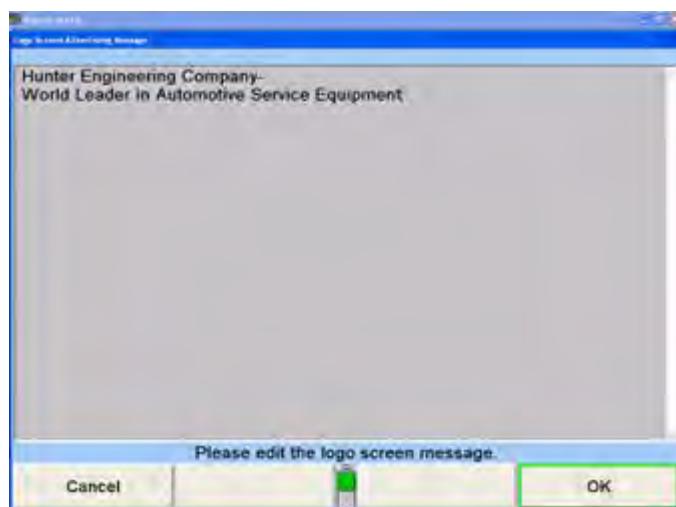


A list of available languages is shown along with the current setting. Press \uparrow or \downarrow until the desired language is highlighted.

Press "OK" to select the highlighted language for the screen displays and return to the "Aligner Set-Up" primary screen.

5.2.2. Setting Up the Logo Screen Advertising Message

When "Logo Screen Advertising Message" is selected, the "Logo Screen Advertising Message" pop-up screen appears.



This item displays an advertising message that will alternate with the logo image on the logo screen.

Enter a message using the keyboard.

After the message has been entered, press "OK" to store the new message or press "Cancel" to restore the old message. The program stores the message on the hard drive and returns to the "Aligner Set-Up" primary screen.



NOTICE

The Logo Screen must be set to Still Logo for the advertising message to appear.

5.2.3. Selecting Displayed Logo Type

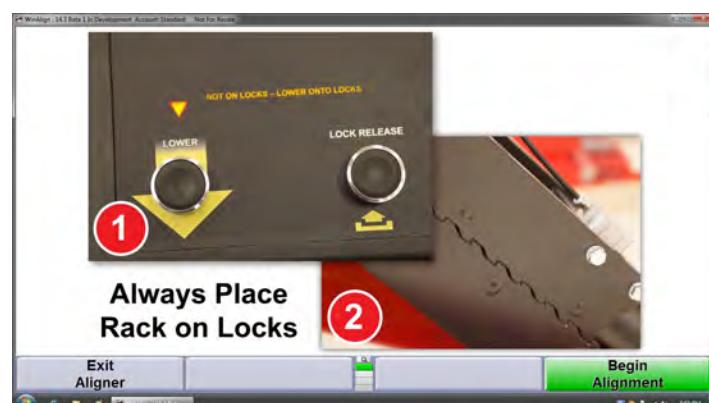
When "Displayed Logo Type" is selected, the logo type selection screen appears.



The user can select an animated logo, traditional still logo or an active logo to display while the program is idle.

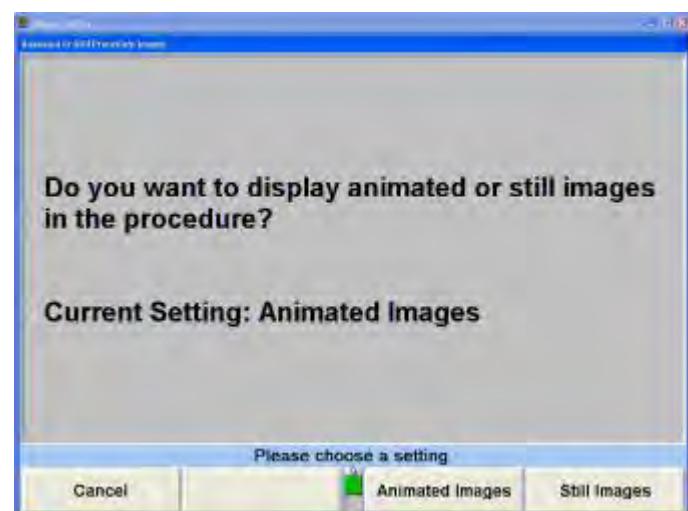
If using a personal advertising message, the Still Logo must be enabled. The "Active Logo" displays a slideshow of custom images, such as a shop logo and current service specials.

To set up the Active Logo screen refer to [Form 6776-T "INSTRUCTIONS FOR ADDING CUSTOM IMAGES TO ACTIVE LOGO IN WinAlign®"](#).



5.2.4. Selecting Animated or Still Procedure Images

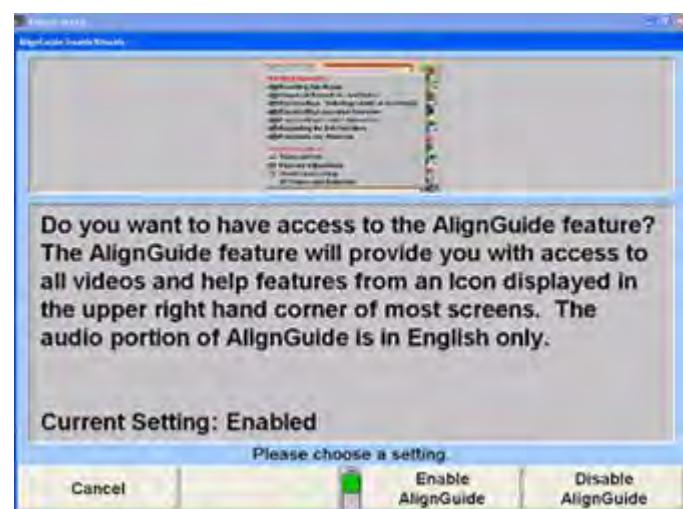
When "Animated Logo or Still Procedure Images" is selected, the "Animated Logo or Still Procedure Images" pop-up screen appears.



The user can select whether animated or the still images will be displayed during the alignment procedure.

5.2.5. Setting Up the AlignGuide Feature

When "AlignGuide® Enable/Disable" is selected, the "AlignGuide Enable/Disable" pop-up screen appears.



Select "Enable AlignGuide" or "Disable AlignGuide". Enabling the AlignGuide gives easy access to an array of information including videos, animation, and WinAlign® Help.

5.2.6. Setting Up the Background and Softkey Colors

Highlight "Set Background Color Selection".

Press "Set-Up Selected Item" to open the pop-up screen to "Set Background Color Selection".



Using the mouse, double-click to select the preferred colors for "Button," "Inset," and "Background." Button - Softkey color

Inset - Any portion of the screen that appears deeper in 3D space. Background - The main portion of the screen.



NOTICE

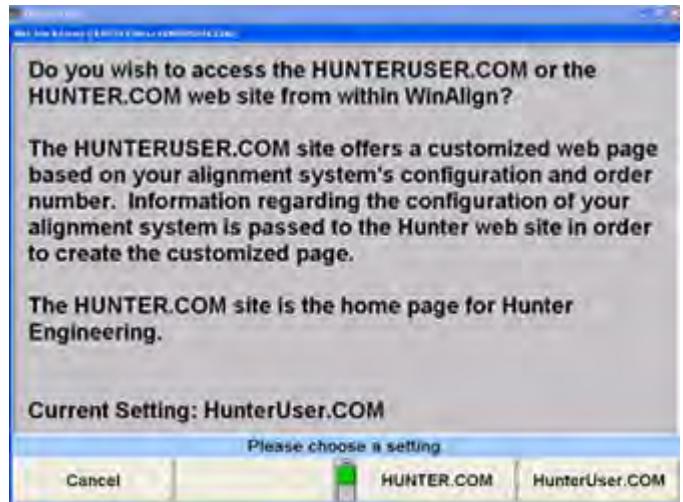
Use the scroll bars on the right of each column to display more color selections.

Press "OK" after all the desired changes have been made to exit Set-Up and save changes.

Pressing  will show the "Revert to Default" softkey. This will return the color scheme to the Hunter default.

5.2.7. Setting Up the Web Site Address

Two separate Hunter websites are accessible directly from the aligner console when it has an Internet connection - HunterUser.com and Hunter.com.



HunterUser.com is customized to the particular user and piece of equipment being used to access the website. HunterUser.com provides easy shortcuts to the most common alignment documents on the Hunter website.

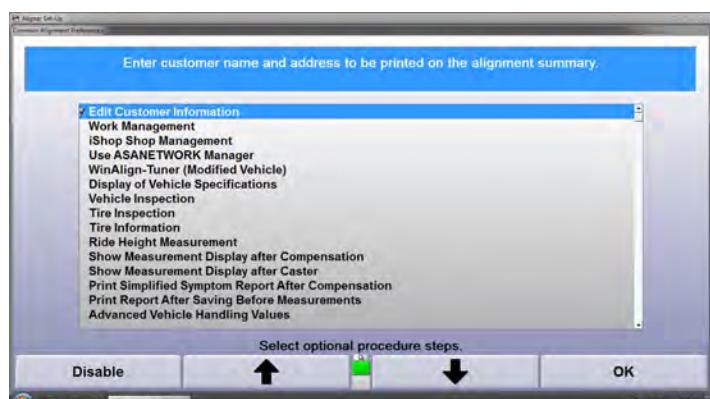
Hunter.com is the homepage and starting point for all detailed information about Hunter Engineering Company and its products.

5.3. Alignment Procedures

Alignment Procedures set-up tailors the alignment process to the individual shop.

5.3.1. Setting up the Common Alignment Preferences

When "Common Alignment Preferences" is selected, the "Common Alignment Preferences" pop-up screen appears.



This selection will Set-Up the aligner program to include or omit certain screens or processes in the alignment procedure.

Press  or  to highlight the procedure to be included or omitted, or select with the mouse or other pointing device.

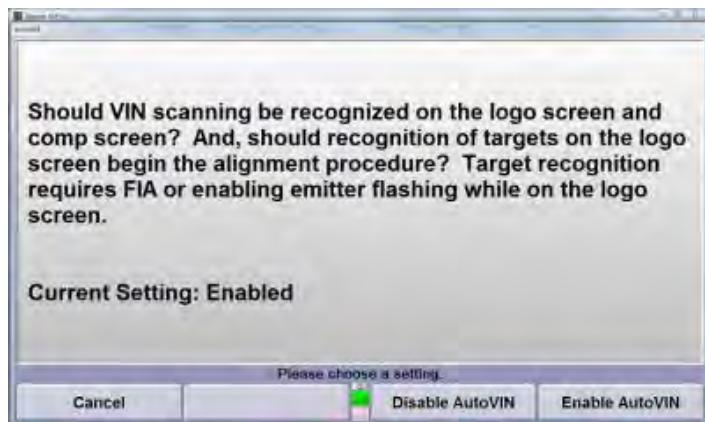
Press "Disable" and the checkmark disappears. The highlighted procedure will not appear in the alignment sequence.

Press "Enable" and a checkmark appears. The highlighted procedure will appear in the alignment sequence.

Press "OK" when the selections are completed. The program will store the settings on the hard drive and return to the "Aligner Set-Up" primary screen.

5.3.2. Setting Up AutoVIN

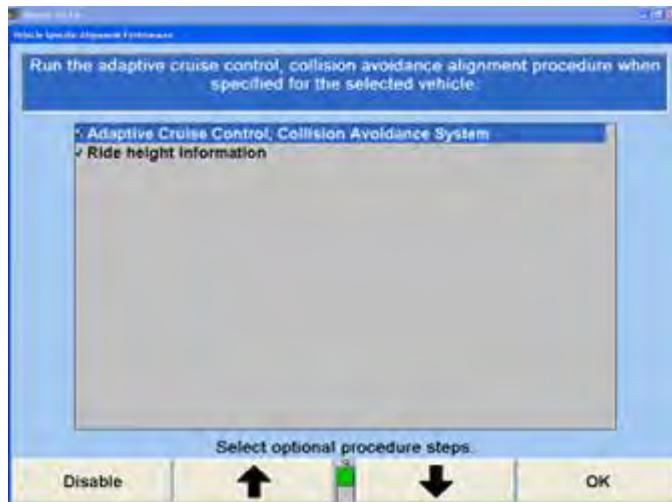
Select "AutoVIN" to enable or disable the AutoVIN™ feature.



Enabling AutoVIN™ speeds up the alignment procedure and is recommended to be enabled.

5.3.3. Setting Vehicle Specific Alignment Preferences

Vehicle Specific Alignment Preferences applies only to specific cars that require individualized procedures. Currently, the specific preferences "Collision Avoidance System" and "Ride Height Information".



Press ↑ or ↓ to highlight the screen to be included or omitted.

Press "Disable" and the checkmark disappears. The highlighted screen will not appear in the alignment prompt sequence.

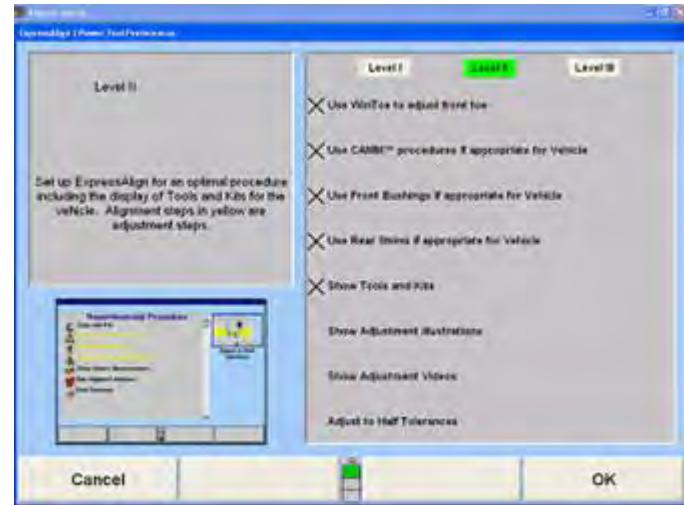
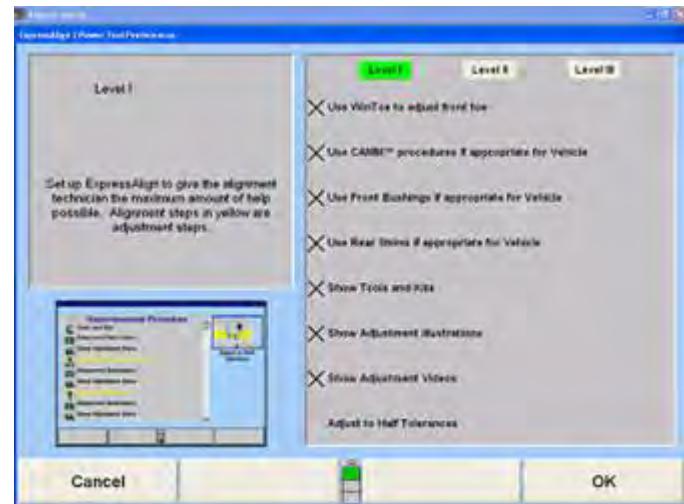
Press "Enable" and a checkmark appears. The highlighted screen will appear in the alignment prompt sequence.

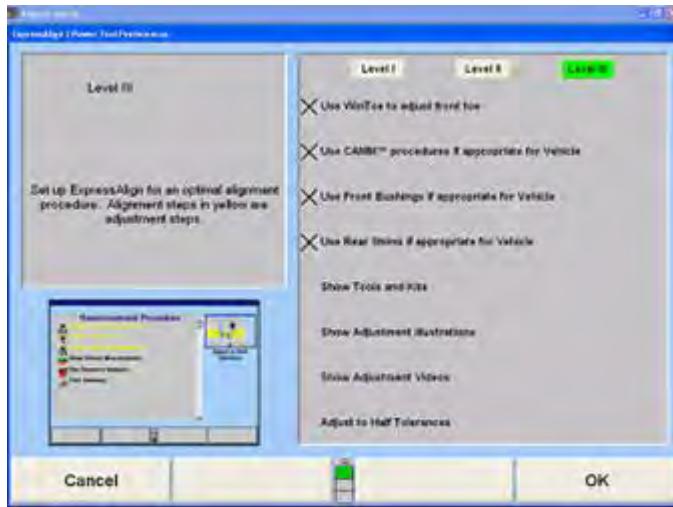
5.3.4. Setting Up the ExpressAlign/Power Tool Preferences

When "ExpressAlign Preferences" is selected, "ExpressAlign Configuration" pop-up screen appears. The default setting is Level III.

This selection will Set-Up the aligner program to include or omit certain alignment power tools.

There are three levels of ExpressAlign® that may be selected. Select "Level I", "Level II" or "Level III".





A power tool can be added or removed from any level.

Press ↑ or ↓ to highlight the power tool to be selected or deselected.

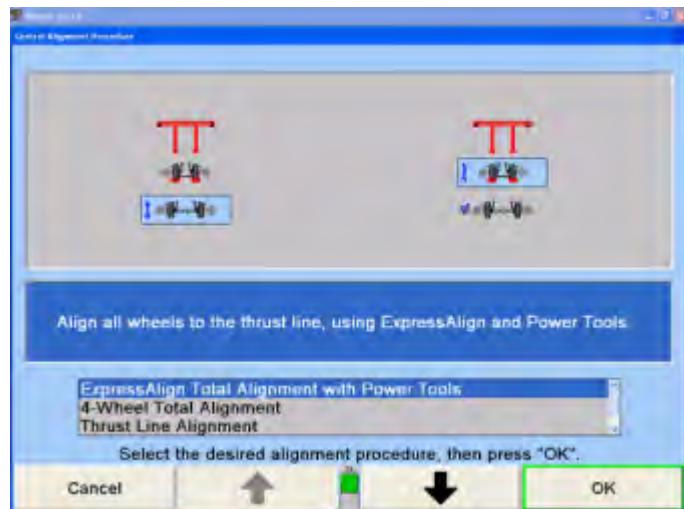
Press "Deselect" and the "X" disappears. The highlighted power tool will not be available to be used in ExpressAlign.

Press "Select" and an "X" appears. The highlighted power tool will be used in ExpressAlign.

Press "OK" when the selections are completed. The program will store the settings on the hard drive and return to the "Aligner Set-Up" primary screen.

5.3.5. Setting Up the Alignment Procedure

When "Alignment Procedure" is selected, the "Control Alignment Procedure" pop-up screen appears with the current setting on the screen.



Press ↑ or ↓ until the desired alignment procedure is highlighted. The steps required are illustrated for the highlighted procedure.

If "4-Wheel Alignment", "Thrust Line Alignment", or "Self-Directed 4-Wheel Alignment" is selected ExpressAlign® will be disabled.

For an explanation of these procedures, refer to Alignment Types.

Press "OK".



NOTICE

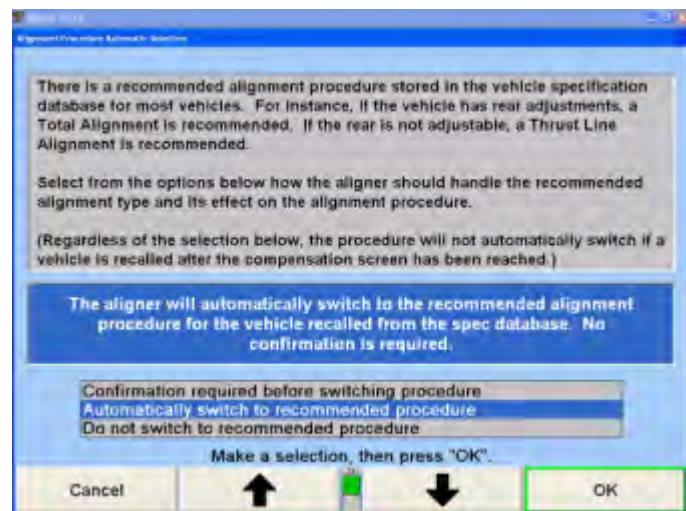
The steps required to perform an alignment procedure may not be the same as the Getting Started example. By following the screen prompts, any type of alignment can be performed.

If a two sensor procedure is used, the rear sensors must be mounted on the rear wheels (even though they are not used) so that their toe transducers will communicate with those in the front sensors. Using this procedure, the rear sensors cannot be compensated.

The program stores the setting on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.3.6. Setting Up the Alignment Procedure Automatic Selection

When "Alignment Procedure Automatic Selection" is selected, the "Alignment Procedure Automatic Selection" pop-up screen appears.



A recommended alignment procedure is stored in the vehicle specification database for most vehicles. For instance, if the vehicle has rear adjustments, a Total Four Wheel Alignment is recommended. If the rear is not adjustable, a Thrust Line Alignment is recommended.

If "Confirmation required before switching procedure" is selected, the aligner program will ask if you want to perform the recommended alignment procedure.

If "Automatically switch to recommended procedure" is selected, the aligner program will automatically switch to the recommended procedure. This setting is the default setting.

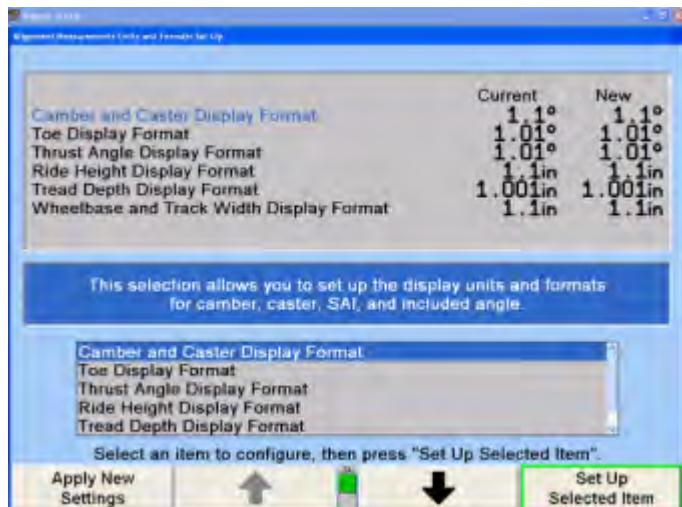
If "Do not switch to recommended procedure" is selected, the aligner program will go through the default alignment procedure.

Press ↑ or ↓ to highlight the desired item.

Press "OK". The program will store the setting on the hard drive and return to the "Aligner Set-Up" primary screen.

5.3.7. Setting Up the Alignment Measurement Units and Formats

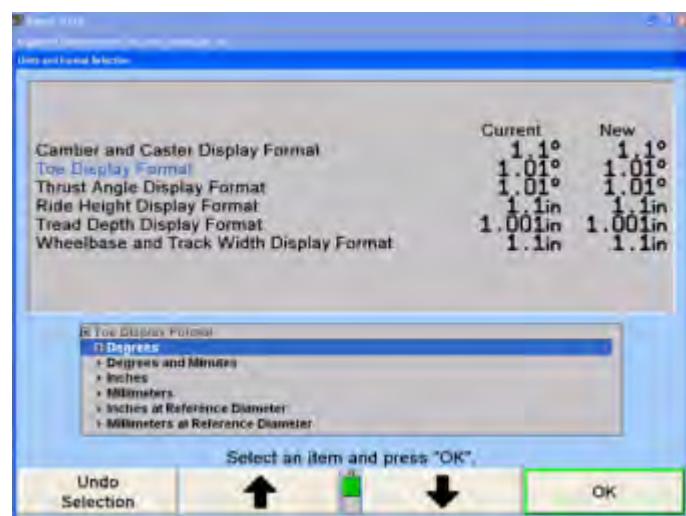
When "Alignment Measurement Units and Formats Set-Up" is highlighted, the current settings for the various alignment display formats are shown in the form of example measurements. When this item is selected, the "Alignment Measurements Units and Formats Set-Up" pop-up screen appears.



This pop-up screen allows the units and formats for the various alignment display formats to be changed. Both the Current and New settings are shown as example measurements.

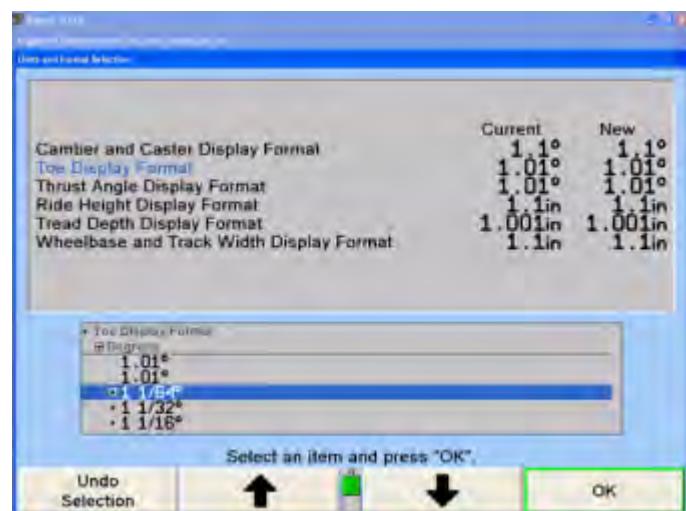
Press ↑ or ↓ to highlight a display format. When a display format is highlighted, a brief explanation of the measurement type appears.

Press "Set-Up Selected Item". The "Units and Format Selection" pop-up screen appears. The units and formats can be changed for the highlighted display format. This pop-up screen continues to show the current and new settings for all the display formats.



The units and formats for each display format are selected on this pop-up screen. Press ↑ or ↓ to highlight the desired units, then press "OK".

The screen changes to show the formats available for the selected unit(s).



Press ↑ or ↓ to highlight the desired format, then press "OK". If the selected format is fractional, a third selection must be made, in the same manner, to select whether the fractions are to be reduced. When the final choice is made, the pop-up screen closes and the display returns to the "Alignment Measurement Units and Formats Set-Up" pop-up screen. The new example for the display format shows the recent selection.

Press ↑ or ↓ to highlight another parameter type and continue to Set-Up the units and formats for all the parameter types. When the new examples show the desired units and formats, press "Apply New Settings". The program stores the new settings on the hard drive and returns to the "Aligner Set-Up" primary screen.

About Units

Units refers to the physical units in which the measurements are made for the various parameter types. Angular measurements, such as camber and thrust angle, are measured as degrees, but can be displayed in the units of degrees or degrees and minutes. Distance measurements, such as ride height and wheelbase, are measured as inches but can be displayed in the units of inches or millimeters.

Toe measurements are always measured as degrees, but can be displayed either as angular or distance measurements. To display toe as an angle, select the units of degrees or degrees and minutes. To display toe as a distance, select the units of inches, millimeters, inches @ reference diameter, or millimeters @ reference diameter.

When toe is displayed as a distance, it refers to the difference in track width between the trailing and leading edges of the tires or wheels. The critical question is, At what diameter of tire or wheel is this distance measured?

A larger diameter means a greater distance for a given angle. If the units are inches or millimeters, the diameter is assumed to be 28.648 inches, thus providing a simple conversion of 2 degrees of toe equals 1 inch for toe (or 25.4 millimeter of toe). If the units are inches @ reference diameter or millimeters @ reference diameter, the system uses the reference diameter that is entered on the Vehicle specifications primary screen.



NOTICE

Domestically, the units of inches @ reference diameter are used primarily by the heavy truck industry. The units of millimeters @ reference diameter are used primarily in Europe.

About Formats

Format refers to the numerical format with which the measurements are displayed for the various parameter types. Only certain choices are available for each parameter type but the choices are all found in the following list:

decimal	1.01	rounded to the nearest 0.01
decimal	1.05	rounded to the nearest 0.05
decimal	1.1	rounded to the nearest 0.1
decimal	1.25	rounded to the nearest 0.25
minutes	1°01"	rounded to the nearest 1"
minutes	1°05"	rounded to the nearest 5"
fractional	11/4	rounded to the nearest 1/4

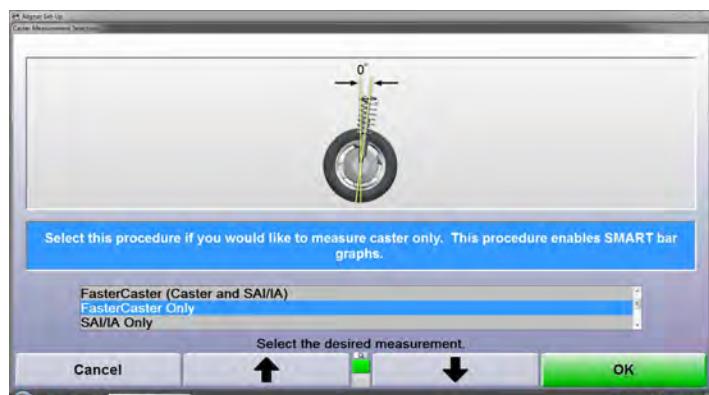
fractional	11/8	rounded to the nearest 1/8
fractional	11/16	rounded to the nearest 1/16
fractional	11/32	rounded to the nearest 1/32
fractional	11/64	rounded to the nearest 1/64

If a fractional format is chosen, the fraction can be reduced or non-reduced to the least common denominator. Examples that illustrate this are as follows:

reduced fractions	1/16, 1/8, 3/16, 1/4, 1/2
non-reduced fractions	2/16, 2/8, 4/16, 4/8, 1/4

5.3.8. Setting Up the Caster Measurement Selection

When "Caster Measurement Selection" is selected, the "Caster Measurement Selection" pop-up screen will appear.



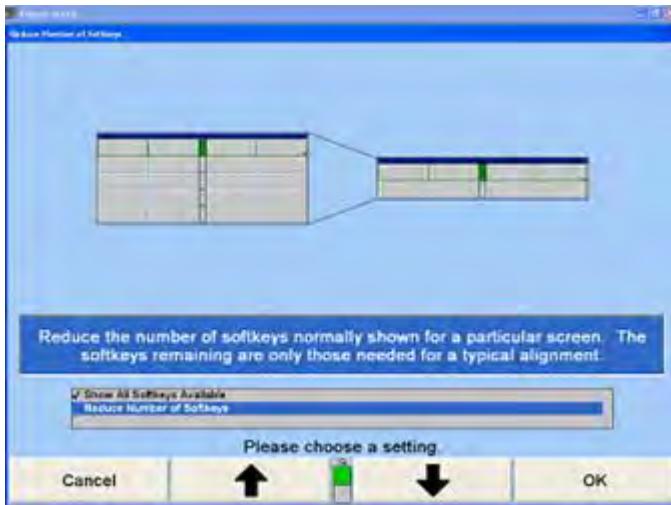
This selection will Set-Up the aligner program to measure Caster Only, Faster Caster (Caster and SAI/IA), Faster Caster Only, or SAI/IA Only as the default. If a Toe-out-on-turns device is enabled in Sensor Set-Up, three additional selections will appear. Those are Faster Caster/SAI/IA Toe-out-on-turns at 20°degrees, Caster/Toe-out-on-turns at 20°degrees, and SAI/IA/Toe-out-on-turns at 20°degrees.

Press **↑** or **↓** until the desired angle is highlighted. When an angle is highlighted, a brief explanation appears.

Press "OK" to set the default to the highlighted measurement selection. The program stores this information on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.3.9. Setting Up the Reduce Number of Softkeys: Enable/Disable

When "Reduce Number of Softkeys: Enable/Disable" is selected, the "Reduce Number of Softkeys" pop-up screen appears with the current setting on the screen.



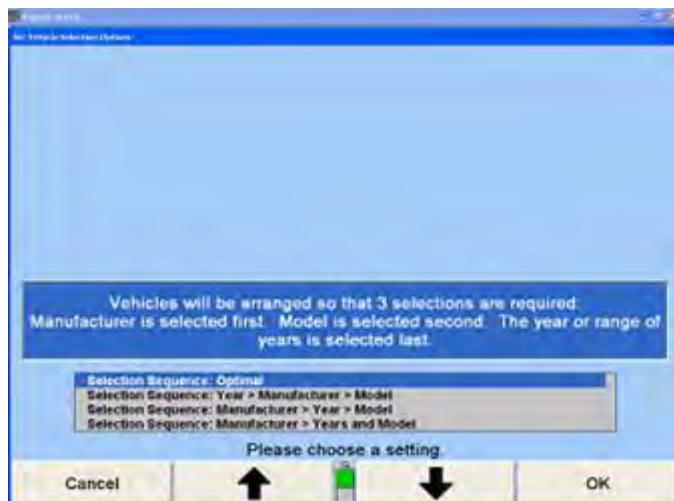
When "Reduce Number of Softkeys" is enabled, the number of softkeys that are normally shown for a particular screen will be reduced to only the number of softkeys needed for a typical alignment. To temporarily access all available softkeys when "Reduce Number of Softkeys" is enabled, select "Show All Softkeys".

Press \uparrow or \downarrow until "Show All Softkeys Available" or "Reduce Number of Softkeys" is highlighted.

Press "OK". The program selects the highlighted item and returns to the "Aligner Set-Up" primary screen.

5.3.10. Setting Up the Set Vehicle Selection Options

Select "Set Vehicle Selection Options", the "Set Vehicle Selection Options" pop-up screen appears with the current setting on the screen. Vehicle Selection Sequence determines the way vehicles are recalled.



Press \uparrow or \downarrow to highlight the selection sequence to be available. Press "OK" when the selections are completed. The program will store the settings on the hard drive and return to the "Aligner Set-Up" primary screen.

5.3.11. Default Vehicle Specification

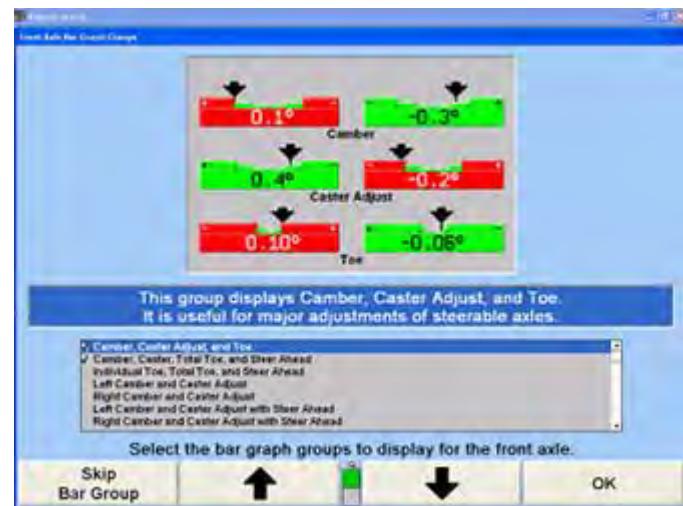
When "Default Vehicle Specification" is selected, the "Recall Specifications" screen will appear. Select the preferred vehicle to appear and press "OK" to return to "Aligner Set-Up". This vehicle's specifications will always be recalled automatically at the beginning of the alignment procedure. If a vehicle has been set as the default, it can be removed in the same manner, by pressing "No Default Spec".

5.4. Bar Graphs

Bar Graph set-up selects the individual styles and types of bar graphs to display.

5.4.1. Setting Up the Front Axle Bar Groups

When "Front Axle Bar Groups" is selected, the "Front Axle Bar Groups" pop-up screen appears.



This item will select the bar graphs to be available while viewing the front axle measurement screen. Each bar graph configuration chosen can be viewed by pressing "Show Next Bar Graphs" on the "Vehicle Measurements and Adjustments" primary screen.

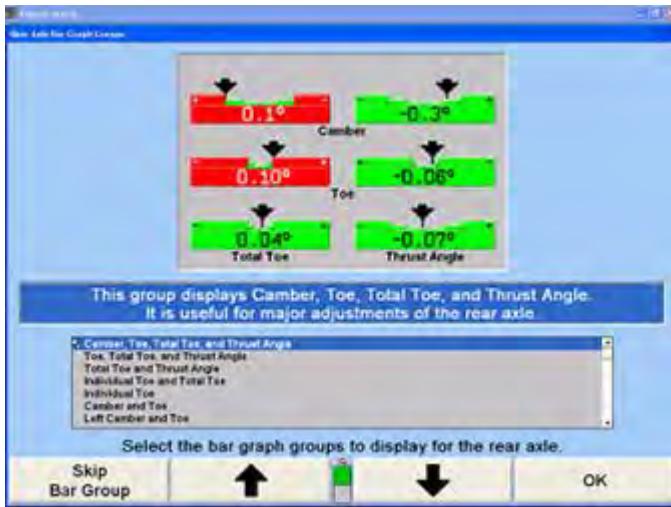
Press \uparrow or \downarrow to highlight the bar graph group to be available.

Press "Enable Bar Group" and a checkmark appears. The highlighted group will be available. Press "Skip Bar Group" and the checkmark disappears. The highlighted bar group will not be available.

Press "OK" when the selections are completed. The program will store the settings on the hard drive and return to the "Aligner Set-Up" primary screen.

5.4.2. Setting Up the Rear Axle Bar Groups

When "Rear Axle Bar Groups" is selected, the "Rear Axle Bar Groups" pop-up screen appears.



This item will select the bar graphs that will be available on the rear axle measurement screen when "Show Next Bar Graphs" is pressed on the "Vehicle Measurements and Adjustments" primary screen.

Press ↑ or ↓ to highlight the bar graph group to be available.

Press "Enable Bar Group" and a checkmark appears. The highlighted group will be available.

Press "Skip Bar Group" and the checkmark disappears. The highlighted bar group will not be available.

Press "OK" when the selections are completed. The program will store the settings on the hard drive and return to the "Aligner Set-Up" primary screen.

5.4.3. Setting Up the Cross Bar Graph/Additional Cross Angles: Enable/Disable

When "Cross Bar Graph/Additional Cross Angles: Enable/Disable" is selected, the "Cross Bar Graph/Additional Cross Angles: Enable/Disable" pop-up screen appears.



This selection will Set-Up the aligner program to show or hide the Cross Bar Graph/Additional Cross Angles.

Press ↑ or ↓ to highlight "Show" or "Hide Cross Bar Graph/Additional Cross Angles".

Press "OK" when the selections are completed. The program will store the settings on the hard drive and return to the "Aligner Set-Up" primary screen.

5.4.4. Setting Up the Show Specs on Bar Graphs: Enable/Disable

When "Show Specs on Bar Graphs: Enable/Disable" is selected the "Show Specs on Bar Graphs: Enable/Disable" pop-up screen appears with the current setting on the screen.



This selection will Set-Up the aligner program to display or hide the vehicle specifications on bar graphs.

Press "Show Specs" to have the vehicle specifications appear on the adjustment bar graphs or "Hide Specs" to have the + and - appear on the adjustment bar graphs. The program stores the setting on the hard drive and returns to the "Aligner Set-Up" primary screen.

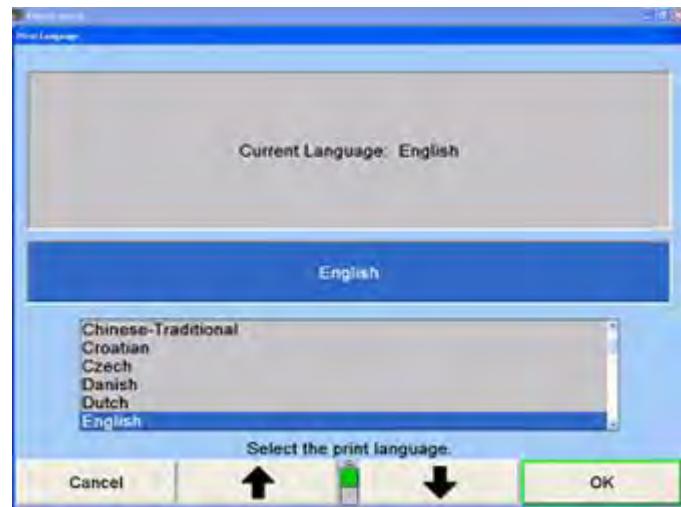
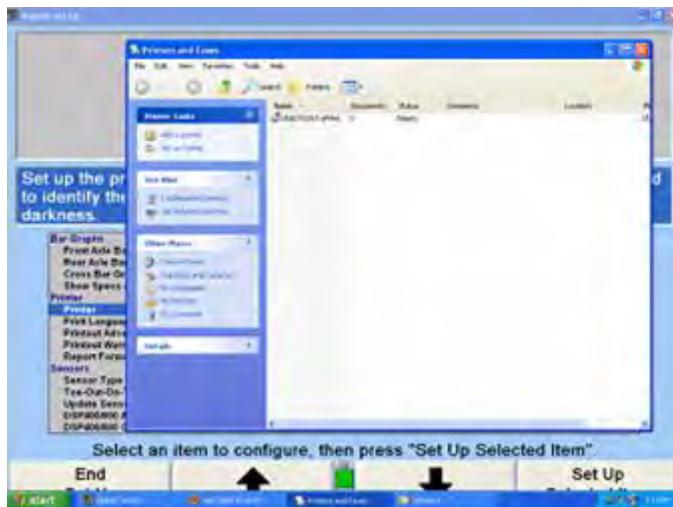
5.5. Printer

The aligner has the same printer settings that any PC would have. A printer can be selected if the aligner is connected to a network, or if multiple printers are accessible.

Other options to be setup are the printout language, advertising message, and various formats.

5.5.1. Setting Up the Printer

When "Printer" is selected, the Windows Print Manager screen appears.



NOTICE

Depending on the operating system, or service pack, some printer setup instructions may be different.

From the Print Manager screen, highlight the printer that you are using.

Click on "File" and then select "Set As Default". This will set the printer as the default printer for the console.



NOTICE

If the printer is already set as default, there will be a check mark to the left of Set As Default, which indicates the printer is already the default printer.

To add a printer, select "Add a printer" from the left hand pane and follow the instructions on the Add Printer Wizard.

To exit printer Set-Up, click on "File," and select "Close".

5.5.2. Setting Up the Print Language

The Print Language identifies the language that appears on the printouts. This selection will not change the language on the screen displays.

When "Print Language" is selected, the "Print Language" pop-up screen appears with the current setting on the screen.

A list of the available languages is shown along with the current setting.

Press ↑ or ↓ until the desired language is highlighted.

Press "OK". The program selects the highlighted language for the printouts and returns to the "Aligner Set-Up" primary screen.

5.5.3. Setting Up the Printout Advertising Message

When "Printout Advertising Message" is selected, the "Advertising Message" pop-up screen appears.



This screen allows you to enter an advertising message to be printed at the beginning of the print summary and the inspection report. You may enter a long message, but if the message is too long, the printout may extend to multiple pages.

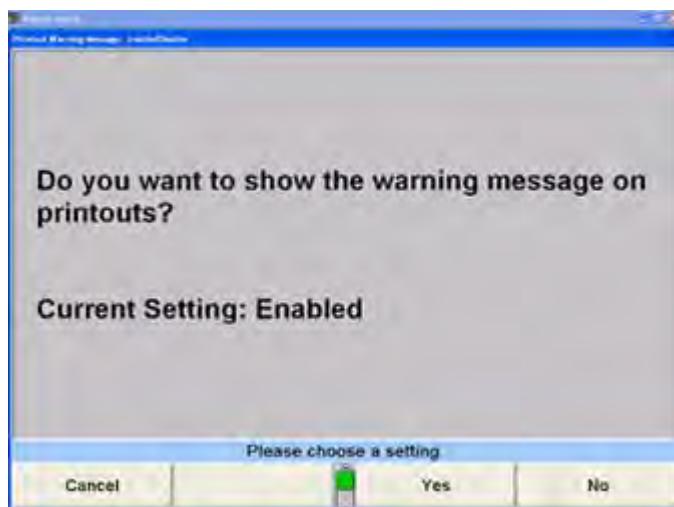
Enter a message using the keyboard.

After the message has been entered, press "OK" to store the new message or press "Cancel" to restore the old

message. The program stores the message on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.5.4. Setting Up the Print Warning Message: Enable/Disable

When "Print Warning Message" is selected, the "Print Warning Message" pop-up screen appears.

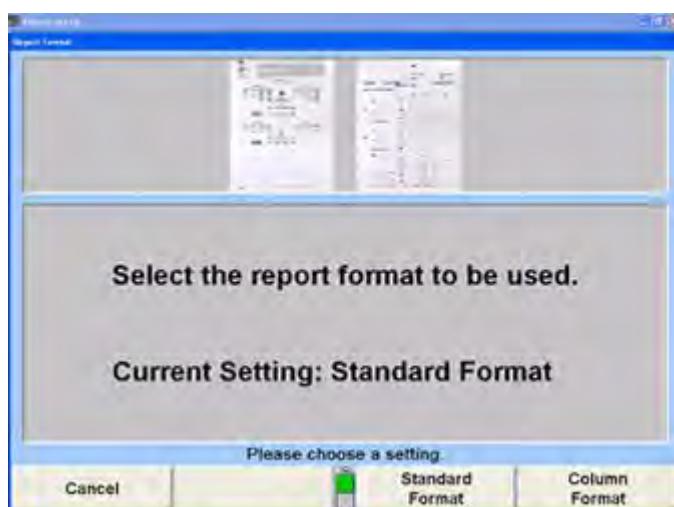


This item selects whether or not a warning message will appear on the printout. If "Yes" is selected, the alignment summary printout will show an asterisk (*) next to any measurements that are not within specifications. A message will appear at the bottom of the printout to explain the meaning of the asterisk.

Press "Yes" or "No". The program stores this setting on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.5.5. Setting Up the Report Format

When "Report Format" is selected, the "Report Format" pop-up screen appears.



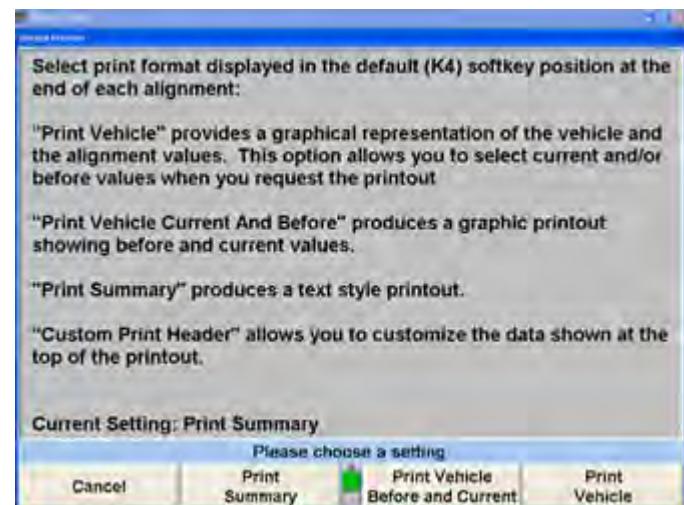
This screen allows you to select the Standard or Column format for reports.

Press "Standard Format" or "Column Format" for the desired report format to be used. The program selects the report format and returns to the "Aligner Set-Up" primary screen.

5.5.6. Setting Up the Default Printout

When "Default Printout" is selected the "Default Printout" pop-up screen appears. The Default Printout format can be set to "Print Summary", "Print Vehicle Before and Current", or "Print Vehicle" from the first level of softkeys.

Select the appropriate format that the aligner will always print.



Select "Print Summary", "Print Vehicle Before and Current", or "Print Vehicle". Once a selection is made the program returns to Aligner Set-up.

The following examples use the Print Preview feature:

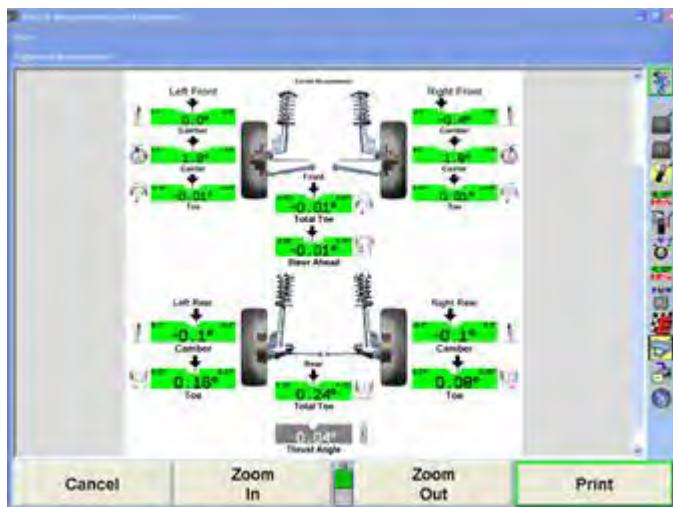
"Print Summary" will print all the measurements in chart form.



"Print Vehicle Before and Current" will print the bar graphs prior to adjustment and the current state of measurements.

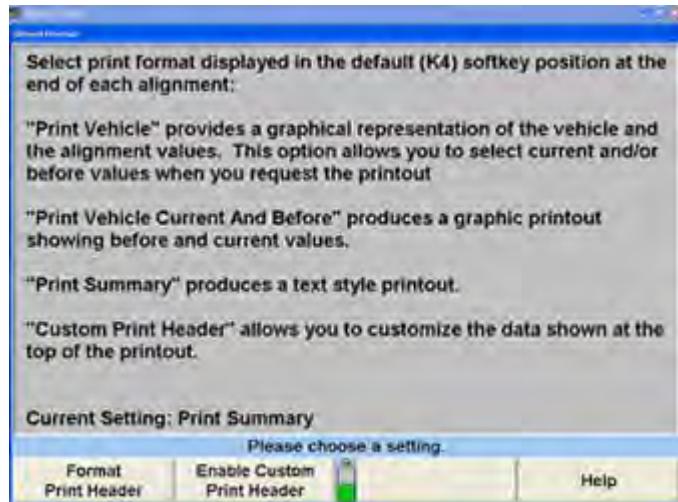


"Print Vehicle" will only print the current measurements in bar graph form.

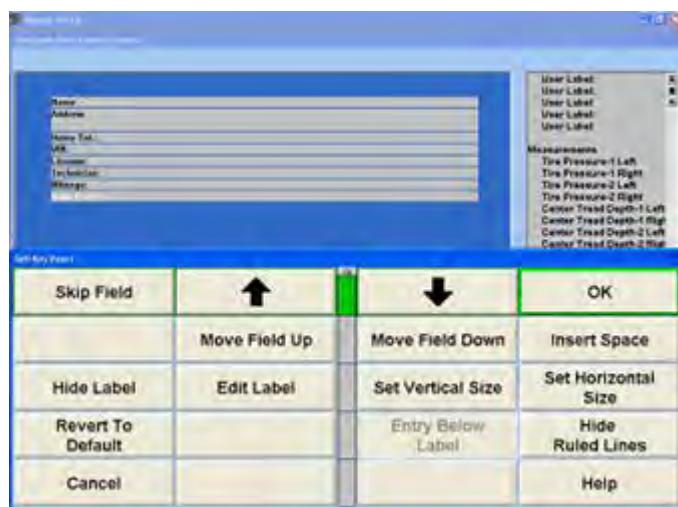
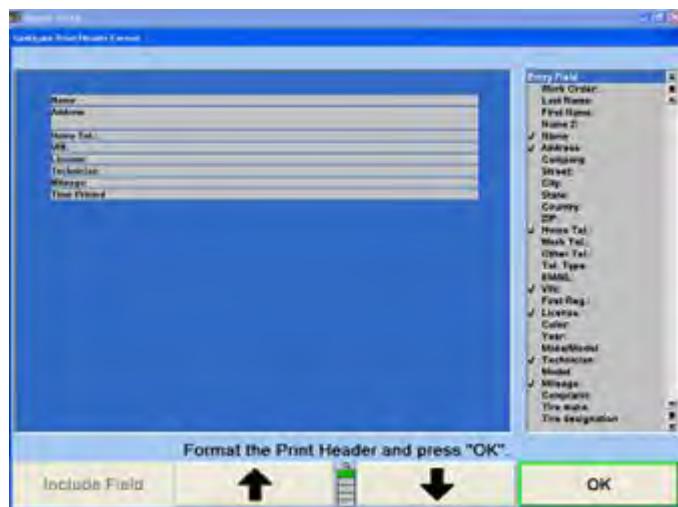


5.5.7. Custom Print Header

Select "Enable Custom Print Header" from the second tier of softkeys on the "Default Printout" screen to customize the information that will display at the top of the printout.

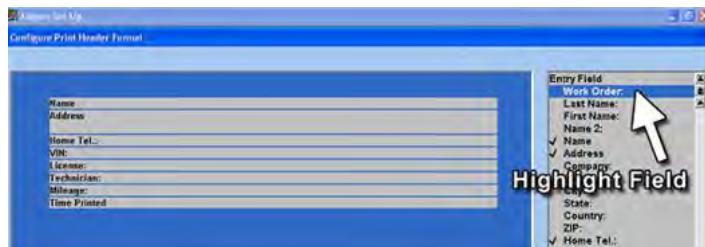


After the Custom Print Header has been enabled the program will return to Aligner Set-up. The Print Header can be customized by selecting "Default Printout" and select "Format Print Header" from the second tier of softkeys to open the "Configure Print Header Format" pop-up screen.

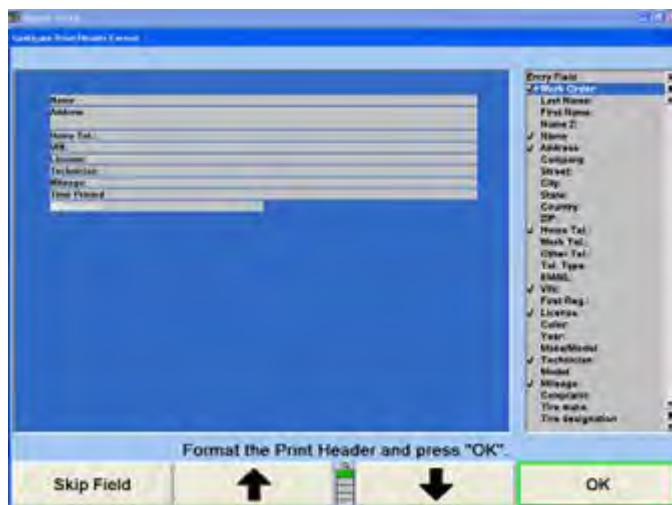


Fields can be added, removed, moved, and have the height and width changed.

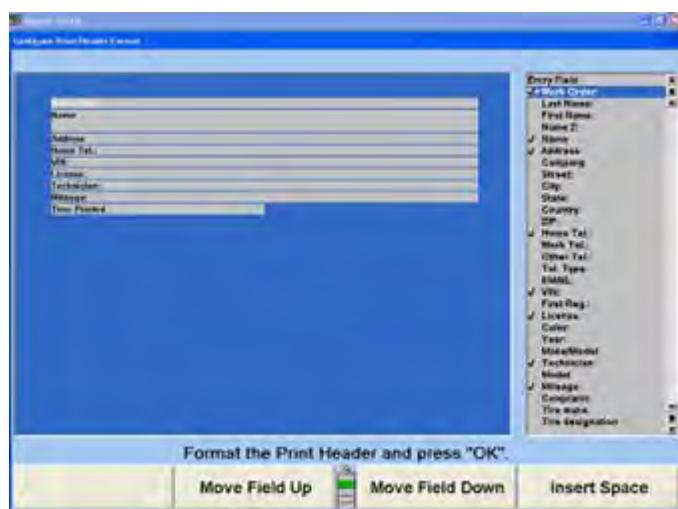
To add a field, highlight the desired field, and select "Include Field". To move through the possible selections, select it with the mouse, or scroll through the list on the right using the arrow keys on the keyboard, the arrow softkeys, or the scrollbar on the right side of the list.



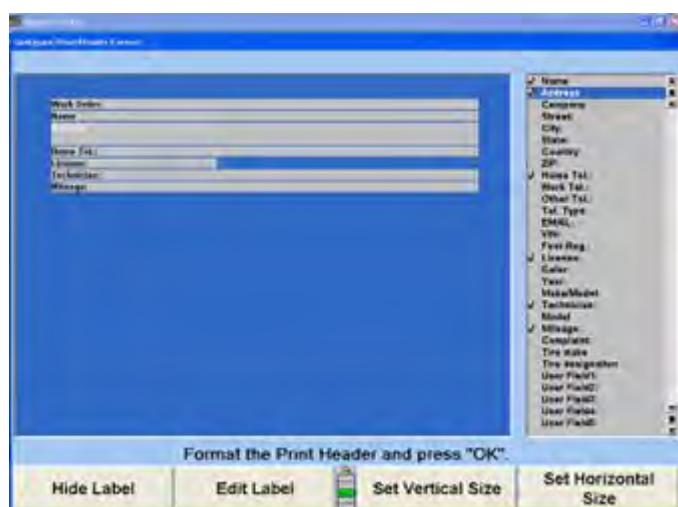
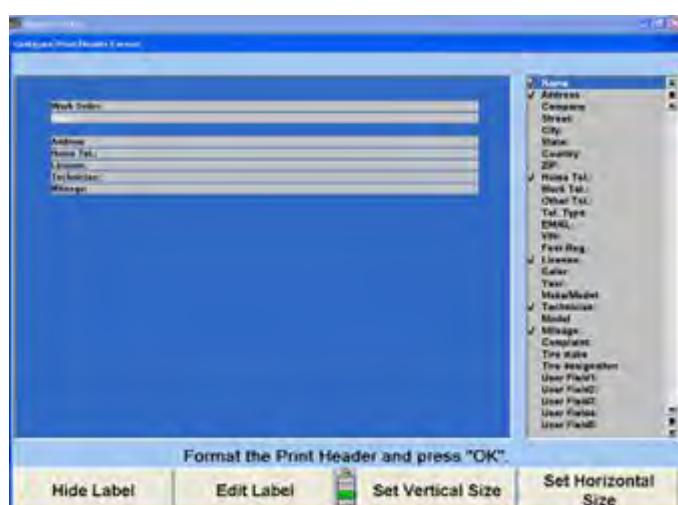
The field will automatically be placed at the bottom of all existing fields. Selected fields in the Header Format will show the text as white. The example below has added the Work Order field.



To move the field to a different location in the header format, highlight the field, and select the "Move Field Up" or "Move Field Down" softkeys to re-position the field. The Work Order field has been moved to the top, as shown below. Select "Insert Space" to insert blank spaces between fields.

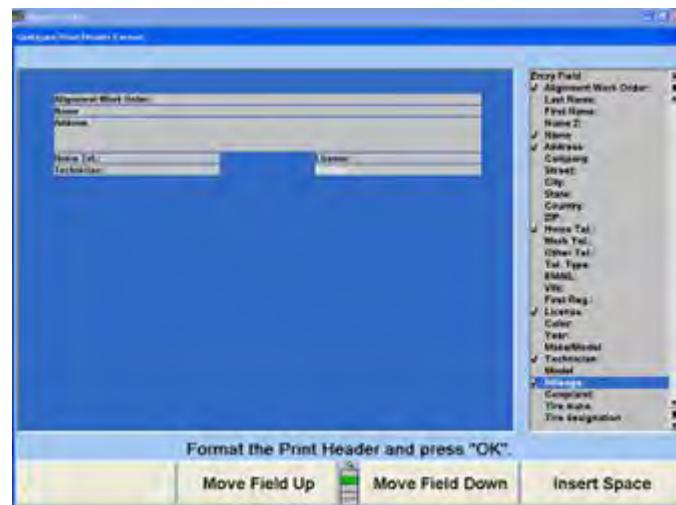
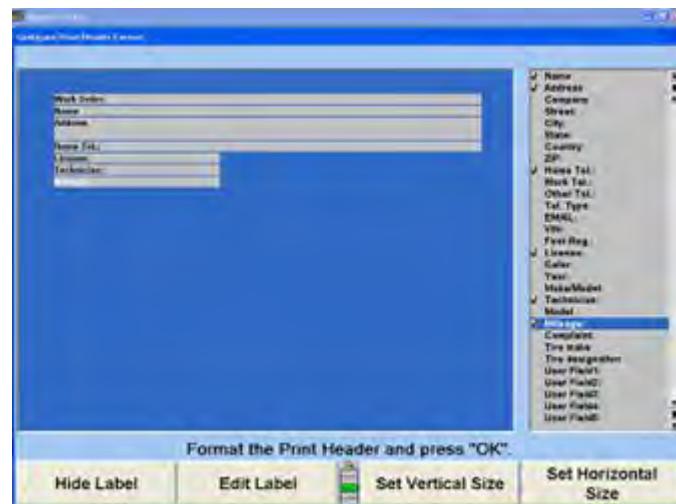


A field can have the vertical height increased or decreased depending on the amount of information to be displayed. The following example reduced the height of the name field. The address field was then moved up and the field height was increased, as shown at right.



Highlighting the field and selecting “Set Horizontal Size” will change the width of the field.

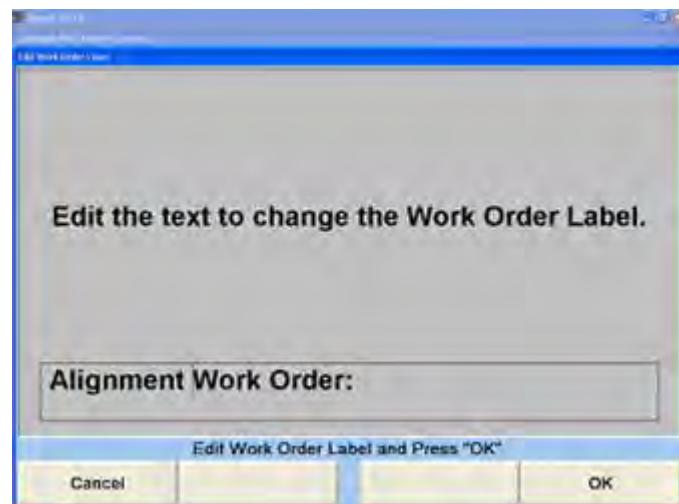
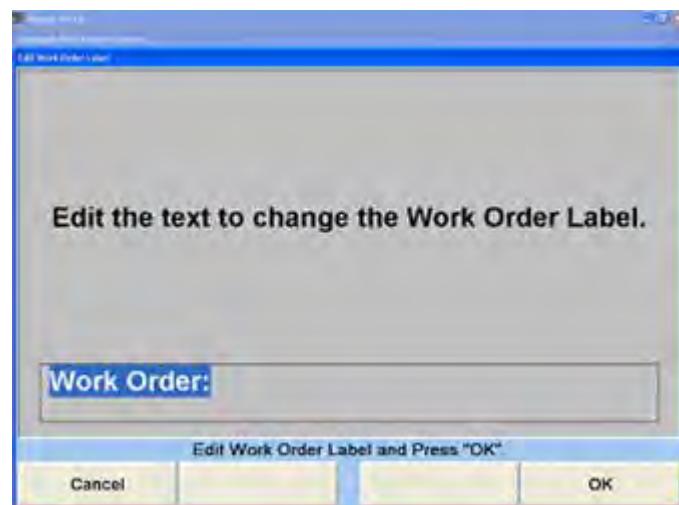
The following example shows that the License, Technician, and Mileage fields have been narrowed. Narrowed fields can be placed side by side by highlighting the field and selecting the “Move Up” or “Move Down” option, as appropriate. The example on the right places smaller fields in columns thereby saving printout space.



Select “Hide Label” to remove the label from the printout. The field will turn gray, indicating that it has been hidden. The field data will still print, however. Select “Show Label” to turn the field label back on.



Select “Edit Label” to customize the label text. The example below changes Work Order to Alignment Work Order. Select “OK” to accept the changes to the label text.

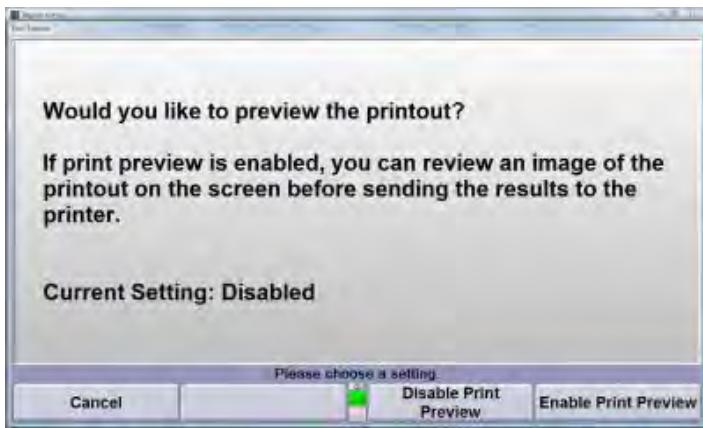


The Header format can further be customized to hide or show the ruled lines in between the fields, or to place the information next to the label or below it.

All changes can be discarded by selecting “Revert to Default”.

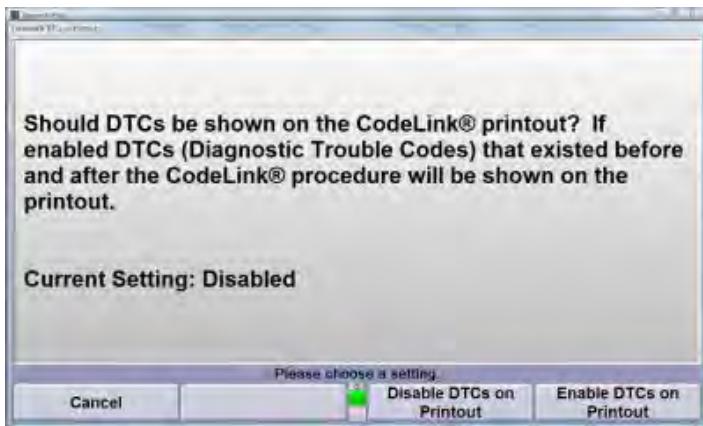
5.5.8. Setting Up the Print Preview

Select “Print Preview” to enable or disable the print preview feature. When enabled, an image of the selected printout can be viewed prior to actual printing. This is separate from the built-in print preview in the “Print” screen.



5.5.9. Setting Up the CodeLink DTC's on Printout

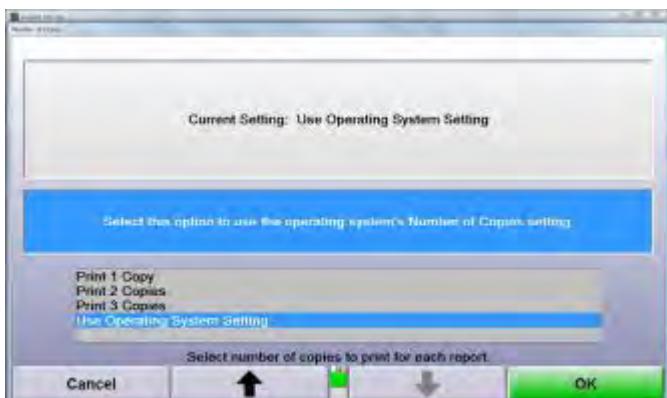
When "Print Warning Message" is selected, the "Print Warning Message" pop-up screen appears.



This item selects whether or not diagnostic trouble codes that existed before and after the CodeLink® procedure will appear on the printout.

5.5.10. Number of Copies

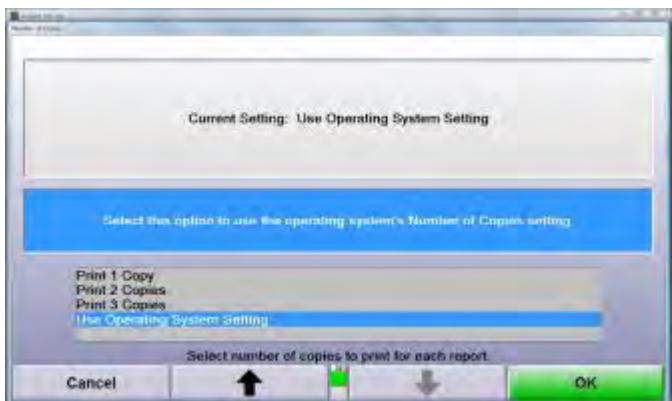
Select the number of copies WinAlign® should print for each printout.



The default setting is "Use Operating System Setting" which prints the number of copies selected in the "Printers" section of the "Control Panel."

5.5.11. Print Selector Printout List

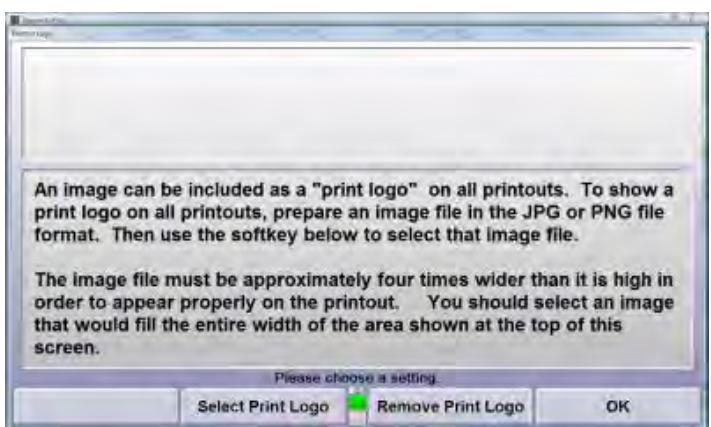
Select whether the Print Selector should display at the end of the alignment procedure to allow the user to choose which printout will print.



The default setting is "Enabled."

5.5.12. Setting Up the Printout Logo

When "Printout Logo" is selected, the "Printout Logo" pop-up screen appears.



The selected image will print at the top of every printout from the aligner. This can be used to display the business logo or other image. The image must be in the JPG or PNG format.

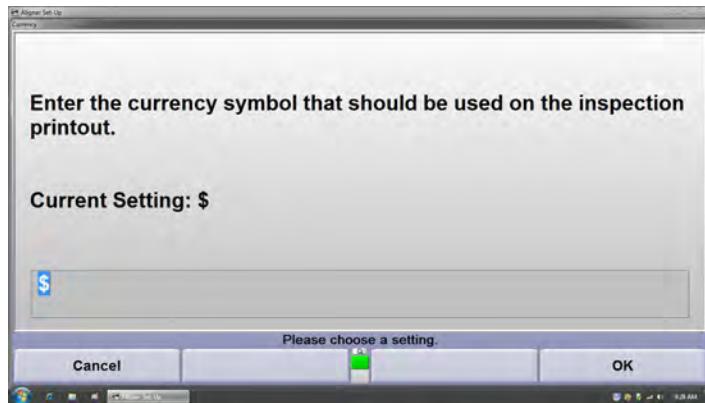
The image should have a 4:1 aspect ratio, for example a 1200 x 300 image would be the correct aspect ratio. In other words it should be four times wider than it is high.

Click on "Select Print Logo" and a navigation window will appear. Select a properly formatted image and select "Open". The selected image will be displayed, if it is the proper size it will fill the empty grey area at the top of the screen. It will also now print at the top of every printout.

Clicking on "Remove Print Logo" will remove the currently selected logo from the printout.

5.5.13. Currency

The currency symbol displayed on the printout can be selected from this setup menu. Enter the symbol to be used then select "OK".

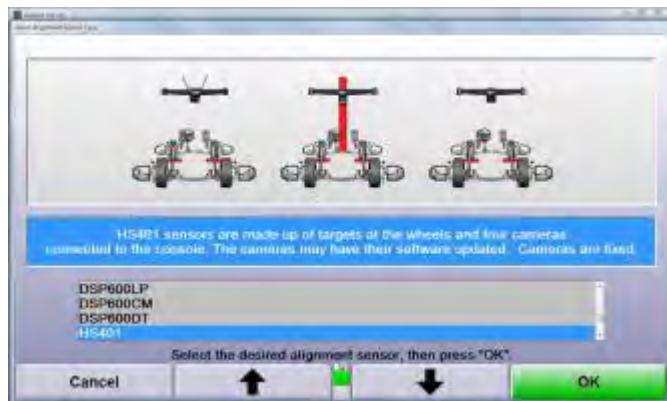


5.6. Sensors

Sensor settings cover sensor type, and all associated hardware and software. These settings should be set-up by the service personnel.

5.6.1. Setting Up the Sensor Type

When "Sensor Type" is selected, the "Select Alignment Sensor Type" pop-up screen will appear.



The sensors are identified on the serial number labels.

Press **↑** or **↓** until the desired sensor type is highlighted. When a sensor group is highlighted, a brief explanation of the group appears.

Press "OK" to set the default to the highlighted sensor type. The program stores this information on the hard drive and returns to the "Aligner Set-Up" primary screen.

Depending on the sensor type selected other options will be available in Set-Up.

5.6.2. Setting Up Optional Equipment

If a remote indicator, CodeLink®, FIA equipped rack, or other optional equipment is used, it must be enabled first to operate.



NOTICE

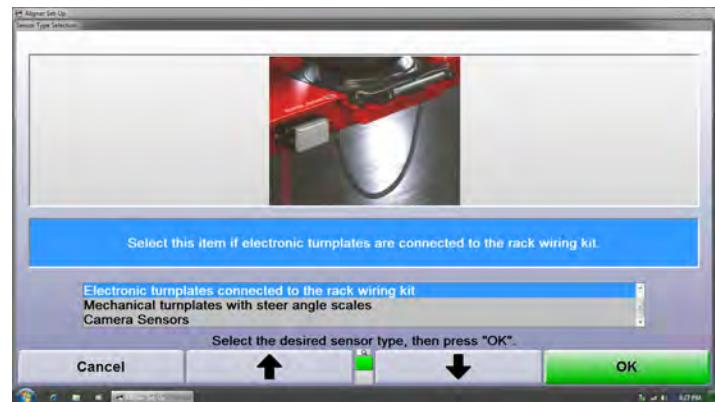
Options to set up or update the software in certain items will not be visible until that equipment is enabled in this screen.

Select "Setup Optional Equipment" in WinAlign® Setup and enable installed equipment.



5.6.3. Setting up the Toe-Out-On-Turns Device

When "Toe-Out-On-Turns Device" is selected, the "Sensor Type Selection" pop-up screen appears with the current setting on the screen.



Press **↑** or **↓** until the desired sensor type is highlighted. When a sensor type is highlighted, a brief explanation of that type appears. Press "OK" to set the default to the highlighted sensor type. The program stores the setting on the hard drive and returns to the "Aligner Set-Up" primary screen.

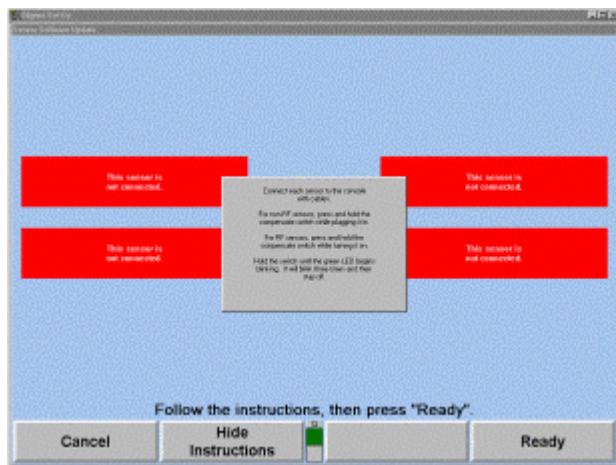
5.6.4. Updating the Sensor Software .



NOTICE

Sensor Software Update is dependent upon the sensors that have been defined in Sensor Set-Up. Make sure that Sensor Set-Up is Set-Up with the sensors being used with the console. If Set-Up is completed, WinAlign® will automatically check the sensors software and notify if an update is needed.

The "Sensor Software Update" pop-up screen updates the software in the sensors.



Sensor software requires updating when the version found in the sensor is not the same, as the version required by the console. This might happen when the console software is updated or when the control board of a sensor is replaced. The console can send the correct software to the sensor, which the sensor then stores in its own non-volatile memory.



NOTICE

The sensor software can be updated in any number of sensors at once. For example, if the console software is updated and sensor software must be updated as a result, all four sensors can be updated simultaneously. If a single sensor is repaired and requires an update, that sensor can be updated by itself.

Plug in each sensor to be updated while holding down its compensation switch. If the sensor has a switch, hold down on the compensation button while turning on the switch. If the sensor powers up with the compensation switch held down, the boot program within it remains

running. The green LED on the sensor blinks three times and then goes out to show this. The Sensor Software Update screen then shows This sensor is ready for updating next to an image of the sensor.



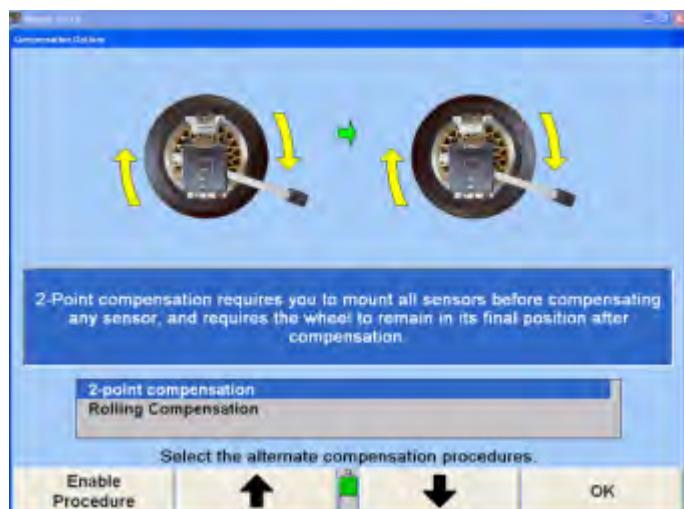
NOTICE

The procedure is menu driven and all instructions appear as the program progresses. Simply follow the on-screen directions. WinAlign® will layer instruction windows throughout the procedure. Once familiar with the instructions, Hide Instructions can be selected to disable this function.

When all sensors are ready, press "Ready". The system updates the software in each sensor, showing a progress indicator beside each sensor. Several minutes are required to complete this. When the screen indicates that all sensors are finished, press "Exit" and the pop-up screen closes.

5.6.5. Setting Up the Conventional Sensors Compensation Options

When "Conventional Sensors Compensation Options" is selected, the "Compensation Options" screen appears. The screen will depict only the appropriate compensation options based on the current sensor type.

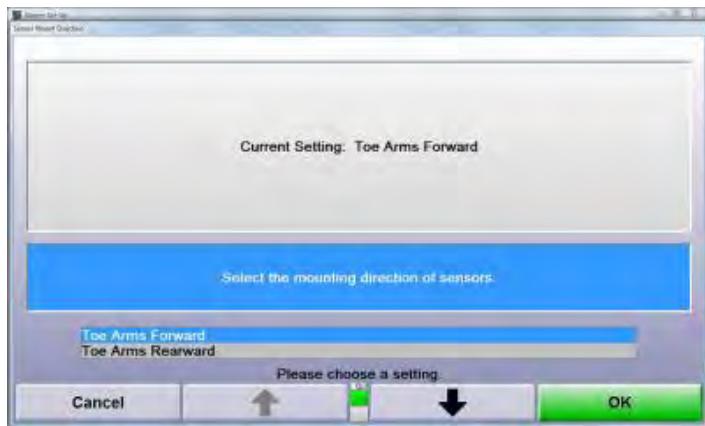


Press ↑ or ↓ until the desired compensation procedure is highlighted. Select "Enable Procedure" and a checkmark will appear next to that compensation option indicating that it will be available during the alignment procedure.

Press "OK". The program stores the setting on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.6.6. Setting Up the Sensor Mount Direction

When "Sensor Mount Direction" is selected, the "Sensor Mount Direction" pop-up screen will appear.



When DSP706 or DSP708 sensors are selected in "Sensor Type" the "Sensor Mount Direction" setup option will appear. Select either Toe Arm Forward or Toe Arm Rearward depending on how the sensors are mounted to the vehicle.

The scanner will provide one of three conditions for each channel:

OK	Indicate the channel is clear and available for use.
HF SYSTEM DETECTED	Indicates that another WinAlign® console is already using this channel. A WinAlign® console can be detected only if it is currently on a measurement screen. The sensors for the other WinAlign® console do not have to be turned on. DO NOT select a channel that is in use by another WinAlign® console.
NOISE	Indicates the console is detecting some sort of signal on the channel that could interfere with the consoles HF communication.

5.6.7. Scanning HF Channels



NOTICE

Scanning Channels is also accessible from "Sensor Diagnostics".



NOTICE

The "Scan Channels" softkey is not available for HFSS Series Sensors.

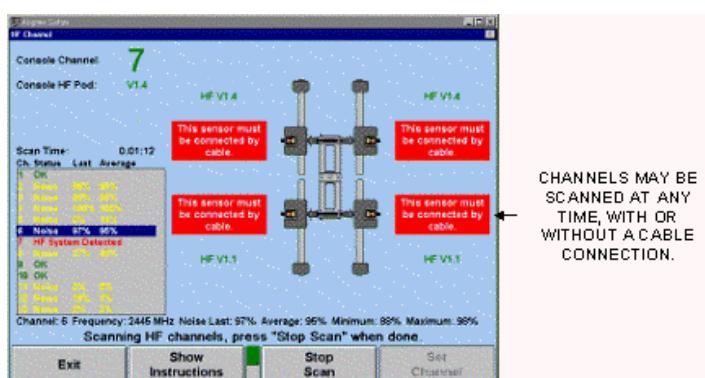
When "Scan Channel" is selected, the screen will be updated as shown below.

The NOISE designator is intended for comparative diagnostics. The "Last" and "Average" percentages have meaning only if there is noise detected on a channel. The error percentage is calculated using the number of received transmissions/theoretical maximum transmissions during the sample time.

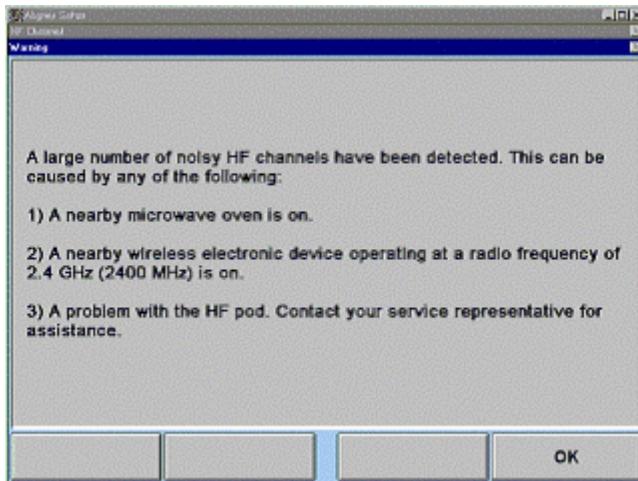
When using scan as a quick-check, the sample time may be as little as one scan through the channels, if that is all that is needed. If intermittent noise is expected or experienced, a scan may be run as long as needed to verify the existence and source of the noise.

If several or all of the channels show that noise is detected, it is recommended to let the scan run for a period, while checking for causes of interference. For example, a nearby microwave oven that is being used will cause most or all channels to be noisy. While running the scan, if a microwave that is in use is turned off, the diagnostic window may indicate that the channels have become clear. This is shown by the error percentage in the "Last" column dropping to 0, and the "Average" column percentages going down.

When a large number of HF channels are found noisy, the following warning appears when the scan is stopped.

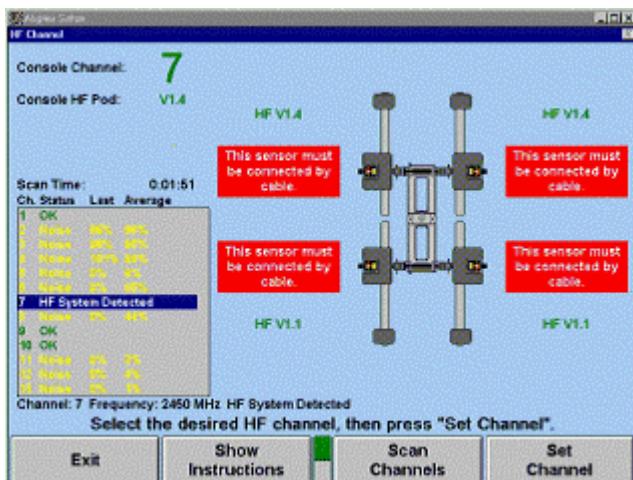


A maximum of thirteen channels will be scanned for other aligners in the proximity, or for external noise including radio frequency interference.



It is recommended that other sources of noise in the area be checked by powering down the suspected sources and watching the channel indicators on the screen.

When the scan is stopped, the channel will move back to the current console channel being used as shown:



5.6.8. Setting Up the HF/HFSS Channel



NOTICE

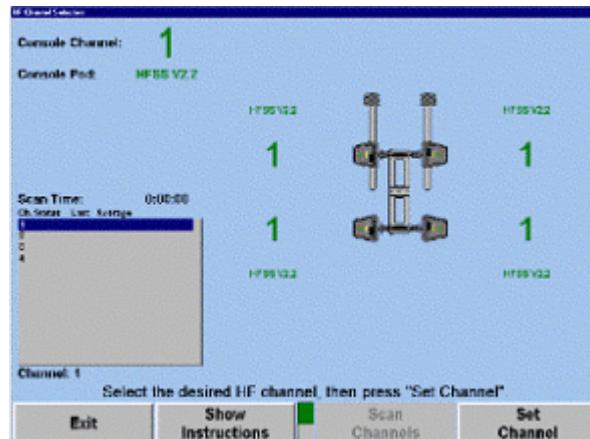
It is recommended that a scan be run before selecting a channel for Set-Up. Without using scan prior to setting channels, a channel that is already in use, or a noisy channel can inadvertently be selected.



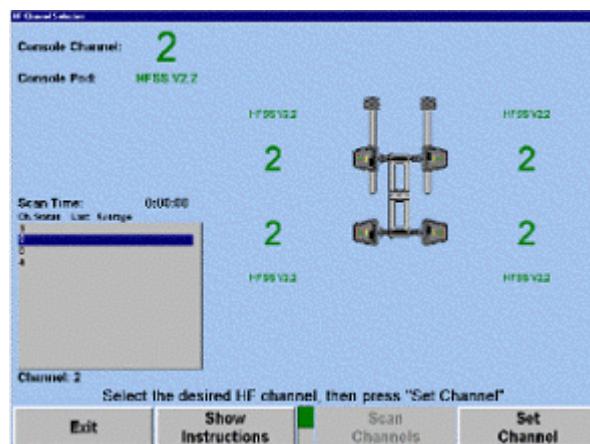
NOTICE

To set HF/HFSS Channels, the sensors must be connected with cables.

To change the console and sensor HF channel, highlight an available channel as shown below.



Select "Set Channel". The console and sensors will be set to the selected channel as shown below.

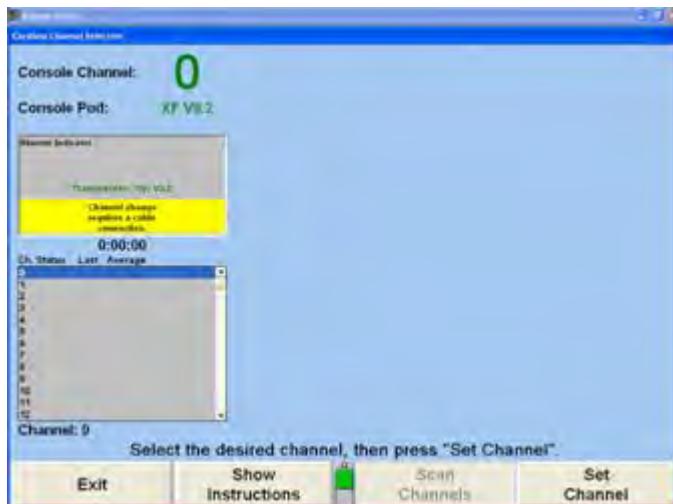


5.6.9. Setting Up the Cordless Channel for the Wireless Remote Indicator

The optional wireless remote indicator requires an XF2 pod (second generation XF pod).

Select "Cordless Channel Selection" to synchronize the channel between the wireless remote indicator and the XF2 pod.

The console channel will be displayed along with the current connected pod version.



Connect the remote indicator to the console using a Burndy cable.

The window will display the current remote indicator version and channel. Choose the same channel from the numeric list and select "Set Channel". The screen will display the following information:



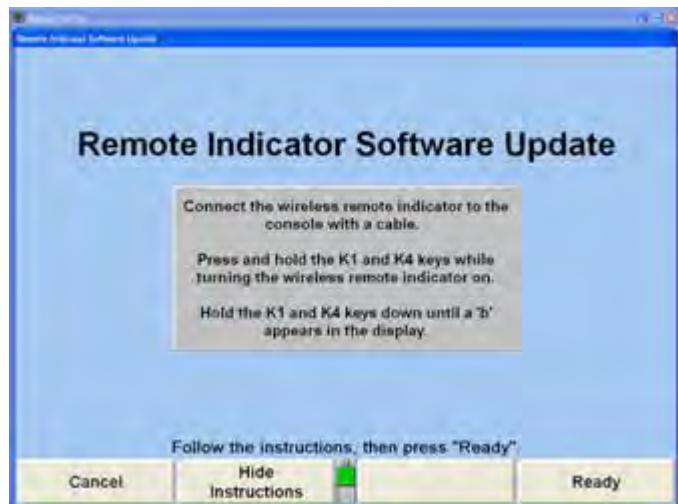
Select "Exit" to return to the main "Setup" screen.

5.6.10. Updating the Remote Indicator Software

If there is an optional wireless remote indicator being used, periodically software will require updating.

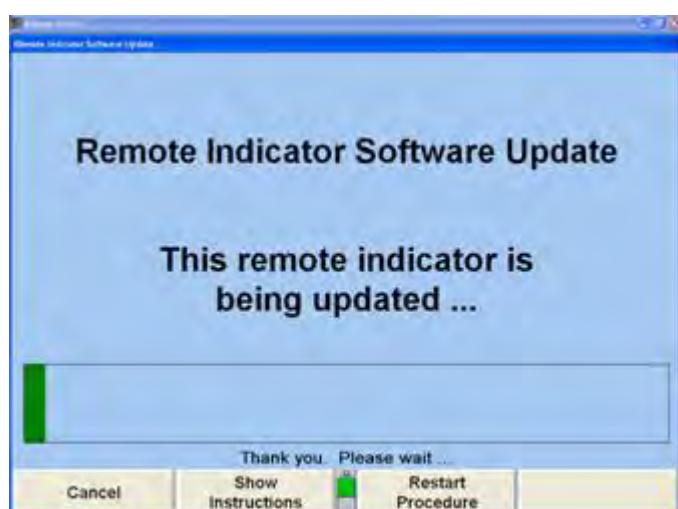
Select "Update Remote Indicator Software" from under the Sensors heading.

Connect the remote indicator to the console with a Burndy cable. Press and hold the "K1" and "K4" keys on the remote indicator while turning the remote on.



Continue holding the "K1" and "K4" keys down until a 'b' appears on the remote indicators display.

The pop-up window will show either the progress of the software being updated, or will show that no software update is necessary.

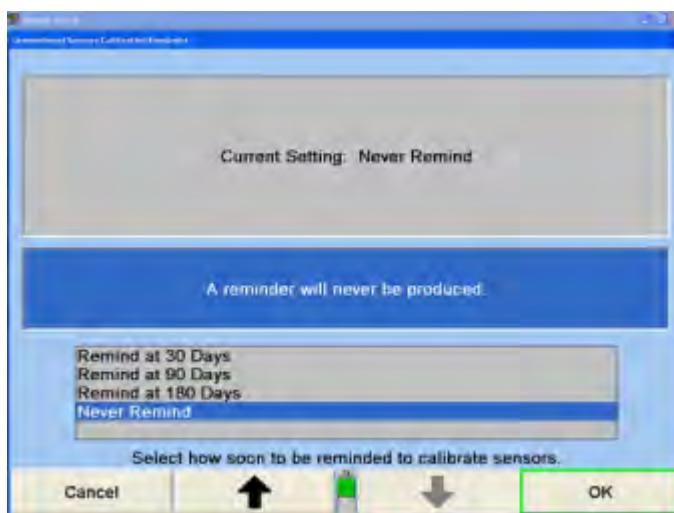


When the update is complete select "Exit" to return to the main Setup screen.



5.6.11. Setting the Conventional Sensor Calibration Reminder

Select "Calibration Reminder" to open the "Calibration Reminder" pop-up screen.



WinAlign® can be set to automatically remind the user to calibrate the sensors periodically every 30 days, 90 days, 180 days, or never.

5.6.12. Updating CodeLink® Software

If there is a CodeLink® device being used, periodically its software will require updating.

Select "Update CodeLink® Software" from under the Sensors heading. Connect the CodeLink® device to the console with a Burndy cable.



The pop-up window will show the progress of the software update process.



When the update is complete select "Exit" to return to the main Setup screen.

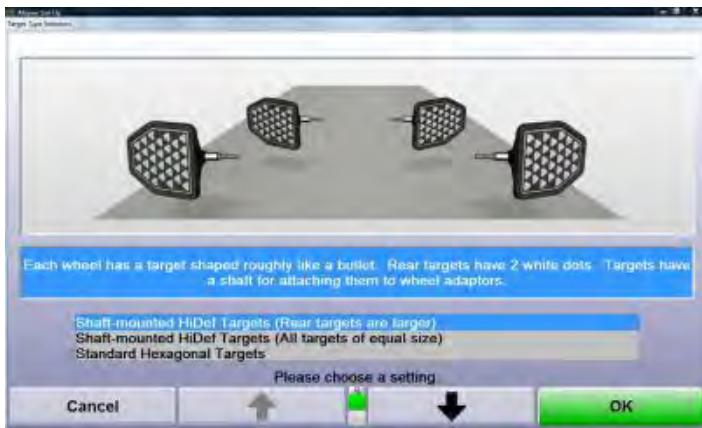


5.7. Settings for Camera Sensors

Sensor settings cover setting specific to camera based sensors. These settings should be set-up by the service personnel.

5.7.1. Setting Up the Target Type

When "Target Type" is selected, the "Target Type Selection" pop-up screen will appear.

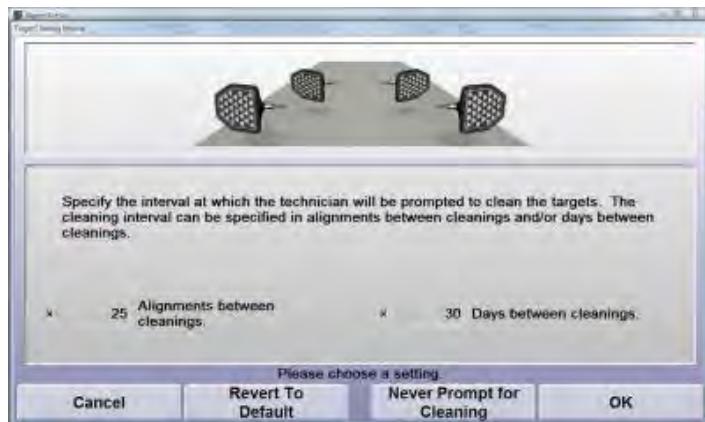


Press ↑ or ↓ until the desired target type is highlighted. When a target type is highlighted, a brief explanation of the group appears.

Press "OK" to set the default to the highlighted target type. The program stores this information on the hard drive and returns to the "Aligner Set-Up" primary screen.

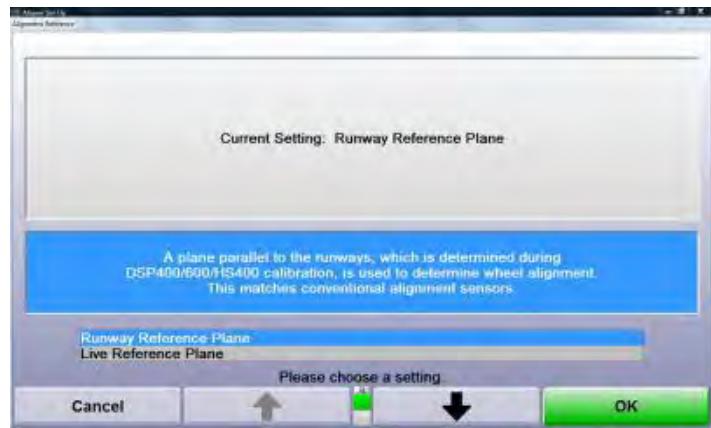
5.7.2. Setting Up the Target Cleaning Reminder

Select "Target Cleaning Reminder" to setup the target cleaning reminder. WinAlign® can automatically be set to remind the user to clean the targets at a user specified interval. The reminder will appear at the beginning of the alignment.



5.7.3. Setting Up the Alignment Reference

When "Alignment Reference" is selected, the pop-up screen will appear.

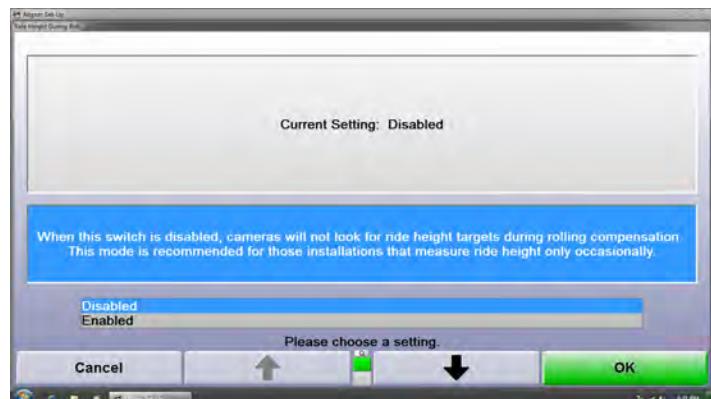


Click on the desired setting or press ↑ or ↓ until the desired Camera Based Alignment Reference is highlighted.

Press "OK" to set the default to the highlighted reference selection. The program will store the information on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.7.4. Ride Height During Roll

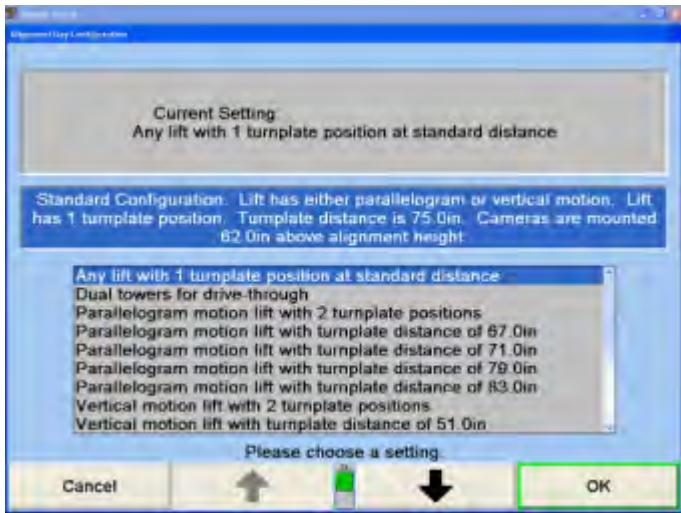
The cameras can be set to look for ride height targets during rolling compensation in order to provide optimized ride height measurements. The default setting is disabled.



5.7.5. Setting Up the Alignment Bay Configuration

Camera Based sensors can be adjusted to accommodate very specific height and distance configurations. This set-up option identifies many possible rack, height, distance, and turnplate configurations.

The "Alignment Bay Configuration" option will only appear if Camera Based sensors have been selected. To change the configuration, select "Alignment Bay Configuration".



Press ↑ or ↓ until the desired Camera Based alignment bay configuration has been highlighted, and select “OK” to set the configuration.

5.7.6. Setting Up the Compensation Procedure

When “Camera Based Compensation Procedure” is selected, the “Select Default Compensation Procedure” pop-up screen will appear.

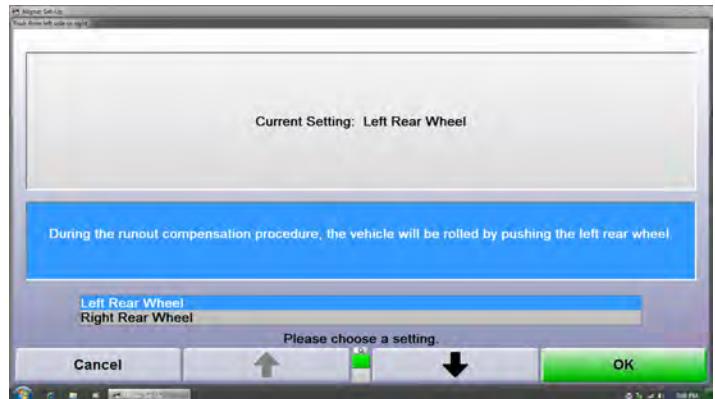


Camera Based Sensors offer five compensation options:

- Rolling Compensation
- QuickComp®
- Jacking Compensation
- Rolling Compensation using VirtualView
- QuickComp® Using the Virtual View

5.7.7. Push From Left or Right Side

Select which rear wheel is to be used during rolling compensation.



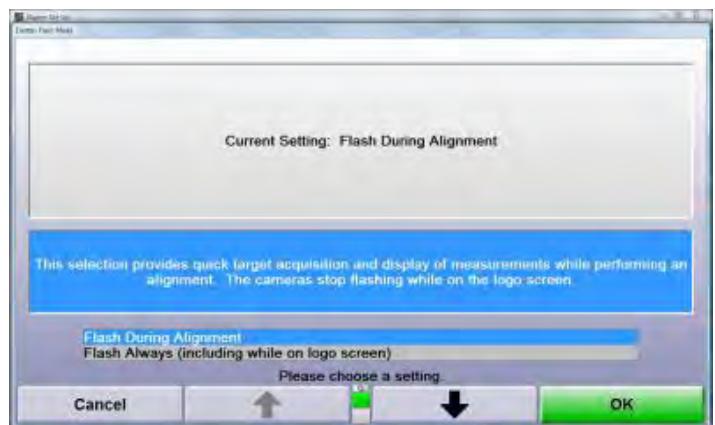
5.7.8. Setting Up the Emitter Flash Mode



NOTICE

This setup option is only available when a camera based sensor is selected and Fully Integrated Alignment is not selected.

When “Emitter Flash Mode” is selected, the “Emitter Flash Mode” pop-up screen will appear.



Two options are available. If the user only wants the red emitters on the cameras to flash when required by the alignment system, select “Flash During Alignment.” If the user wished the emitters to flash constantly, select “Flash Always.”

5.7.9. Setting Up the Lighting Mode

When “Lighting Mode” is selected, the “Lighting Mode” pop-up screen will appear.

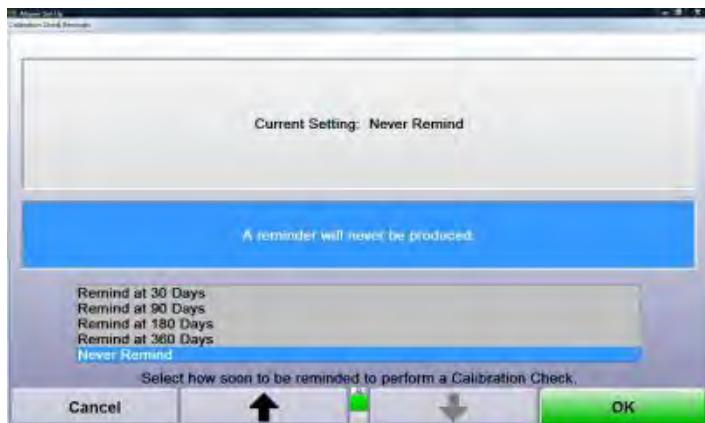


Two options are available. Select “Standard Mode” for normal shop conditions. Select “Bright Light Mode” when shop conditions have bright garage lighting, or intense sunlight/reflection which may disrupt the targets.

5.7.10. Setting Up the Calibration Check

Reminder

Select “Calibration Reminder” to open the “Calibration Reminder” pop-up screen. WinAlign® can automatically be set to remind the user to calibrate the sensors periodically every 90 days, every 180 days, every 360 days, or never.



5.7.11. RackTrack Movable Camera Selection



NOTICE

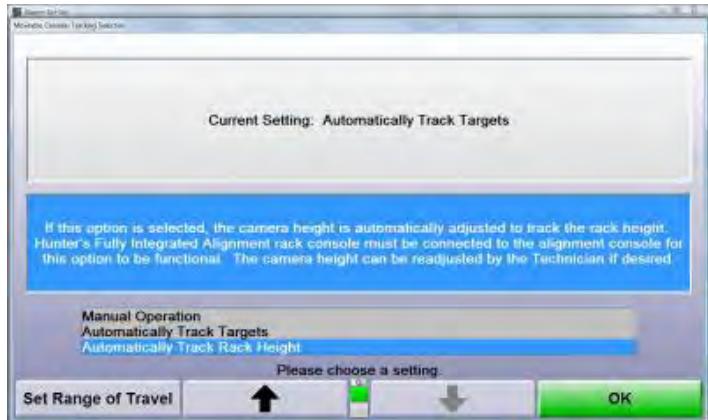
This setup option is only available when a target type with movable cameras is selected in “Sensor Type”.



WARNING

Before operating the camera lift, ensure there are no obstacles above or below the camera lift cross bar.

The cameras can be set to track the rack (for FIA equipped racks), the targets, or moved manually by the technician.



Range of Travel



NOTICE

The camera lift system has limit switches that prevent excessive travel. During either the down or up movement, the operator may encounter those limit switches which will stop motion. If that occurs, the operator should simply release the arrow button and proceed with the remainder of the procedure.

When the camera lift system is first installed, it will require the setting of the upper and lower limits of the range of travel. Select “Set Range of Travel” to limit the maximum and minimum travel of the cameras.



Use the up and down arrows on the keyboard to move the cameras to the maximum height of travel and select “Set Maximum.” Then move the cameras to the lowest point of travel and select “Set Minimum.” Press “OK” when done.

Tracking Range

Press the Menu Shift and select "Set Tracking Range" to set the compensation height and to limit the maximum and minimum travel of the cameras when tracking.

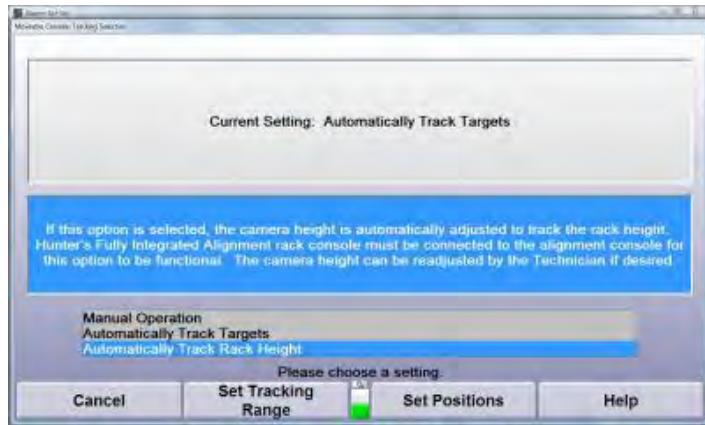


Use the up and down arrows on the keyboard to move the cameras to the desired compensation position and select "Set Compensation."

Use the up and down arrows on the keyboard to move the cameras to the maximum height of travel and select "Set Maximum." Then move the cameras to the lowest point of travel and select "Set Minimum." Press "OK" when done.

Position Settings & Labels

The preset positions and the associated text can be changed by selecting "Set Positions" on the second row of softkeys on the "Moveable Cameras Tracking Selection" screen.



Use the menu shift, **2**, key to move to the second row of softkeys.



Use the up and down arrow keys on the keyboard to move the camera lift to a desired position.

Press the desired button and the associated preset will change to the current cross bar position.

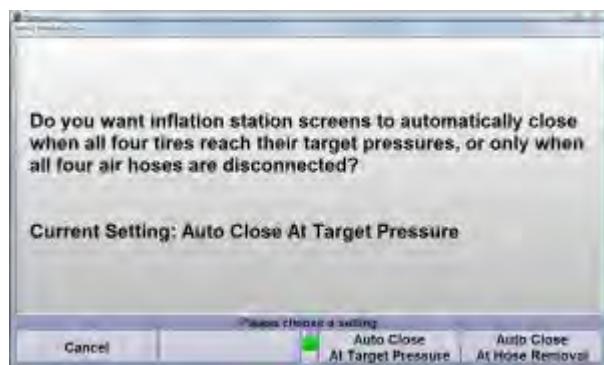
To change the preset text, use the mouse to right click on the desired text. The text will change into edit mode.

5.8. Fully Integrated Alignment Options

These setup options are only available when "Fully Integrated Alignment™" is selected in "Optional Equipment"

5.8.1. Inflation Station Auto Close

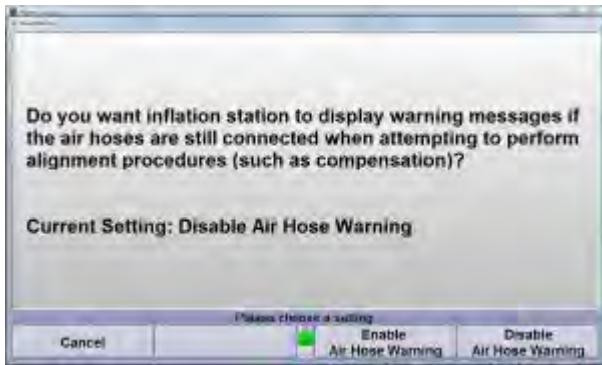
Choose if the Inflation Station screens close automatically when the tires reach the target pressure or when the hoses are removed from the vehicle.



The default setting is "Auto Close at Target Pressure."

5.8.2. Air Hose Warnings

Choose if Inflation Station provides warning messages if the hoses are still connected when attempting to perform alignment procedures.



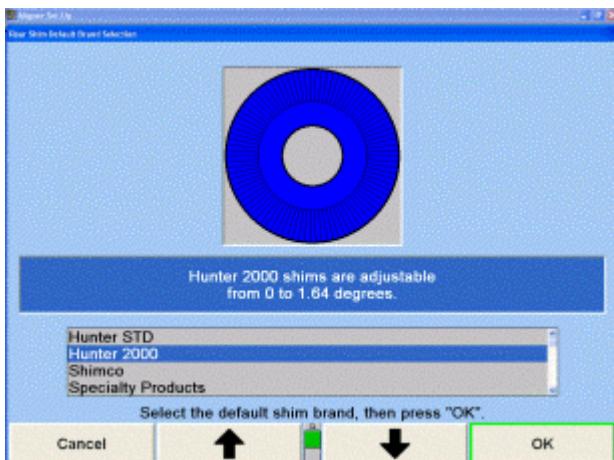
The default setting is "Disable Air Hose Warning."

5.9. Power Tools

Power tools settings can be adjusted for rear shims, front bushings, tools and kits, and VirtualView settings.

5.9.1. Setting Up the Rear Shim Default Brand

When "Rear Shim Default Brand" is selected, the "Rear Shim Default Brand Selection" pop-up screen will appear.

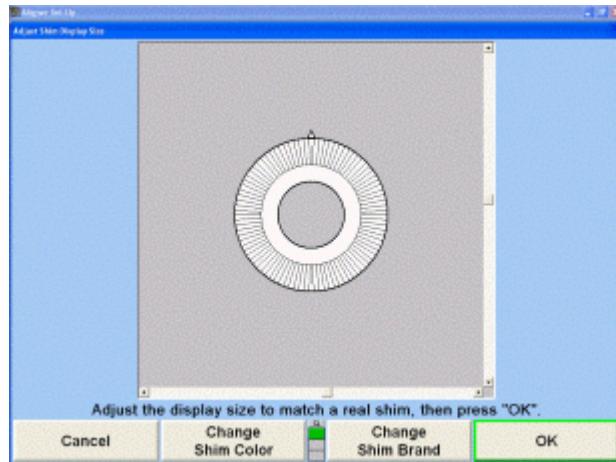


Press ↑ or ↓ until the desired shim is highlighted.

Press "OK" to set the default to the highlighted shim selection. The program will store the information on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.9.2. Setting Up the Rear Shim Display Size

When "Rear Shim Display Size" is selected, the "Adjust Shim Display Size" pop-up screen will appear.



The screen will display the default shim.

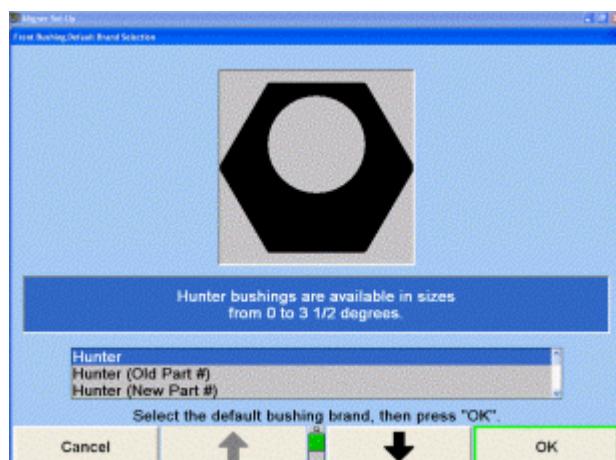
Press "Change Shim Color" and/or "Change Shim Brand" to select the desired shim.

Press "Make Shim Wider", "Make Shim Narrower", "Make Shim Shorter", or "Make Shim Taller" to adjust the shim size.

Press "OK". The program will store the information on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.9.3. Setting Up the Front Bushing Default Brand

When "Front Bushing Default Brand" is selected, the "Front Bushing Default Brand" Selection pop-up screen will appear.

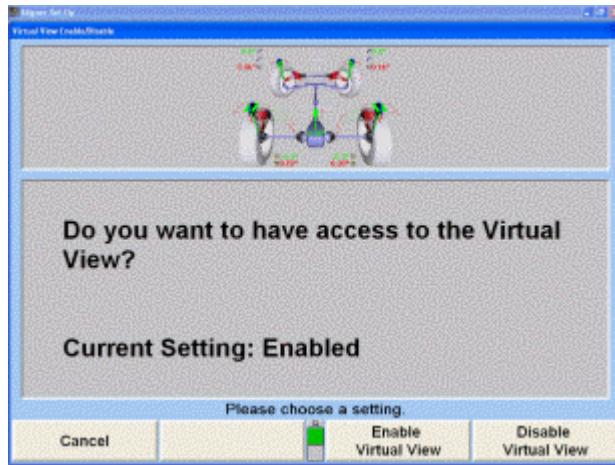


Press ↑ or ↓ until the desired bushing is highlighted.

Press "OK" to set the default to the highlighted bushing selection. The program will store the information on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.9.4. Setting up VirtualView

When “VirtualView Enable/Disable” is selected, the “VirtualView Enable/Disable” pop-up screen will appear.



Press “Enable VirtualView” to enable Virtual View®.

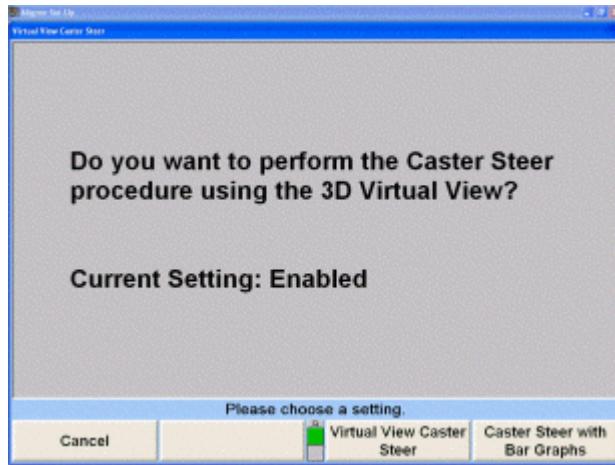
OR

Press “Disable VirtualView” to Disable Virtual View.

Press “OK” to set the default to the Virtual View selection. The program will store the information on the hard drive and returns to the “Aligner Set-Up” primary screen.

5.9.5. Setting Up VirtualView Caster Steer

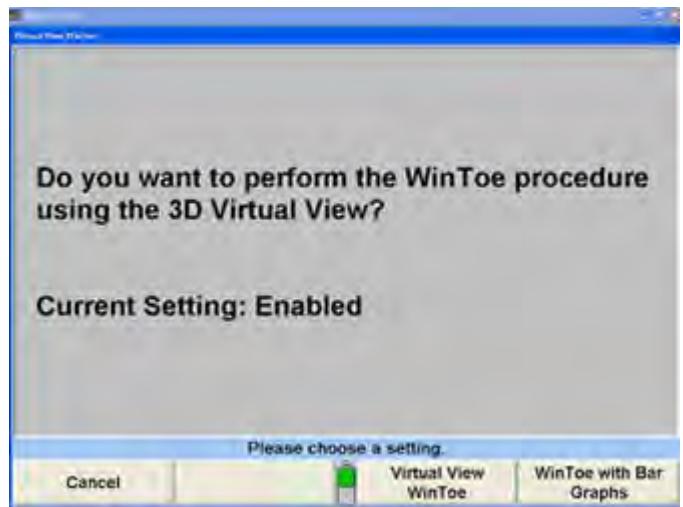
When “VirtualView Caster Steer” is selected, the “VirtualView Caster Steer” pop-up screen will appear.



Press “VirtualView Caster Steer” to perform the caster steer while remaining in VirtualView®. Press “Caster Steer with Bar Graphs” to perform the caster steer using the conventional bar graphs.

5.9.6. Setting Up VirtualView WinToe

Select “VirtualView WinToe” to enable or disable the VirtualView® version of WinToe®.



Enable the setting by selecting “VirtualView WinToe”. Conventional WinToe can be enabled by selecting “WinToe with Bar Graphs”.

5.9.7. Setting Up Live or Manual Ride Height

Select “Live or Manual Ride Height” to choose between automatically entered ride height values or manually entered ride height values.



Live ride height requires the special ride height fender-mounted targets that measure the differences between the axis of rotation (spindle) and the wheel well. “Select Live Ride Height” to enable, otherwise ride height values must be manually entered.

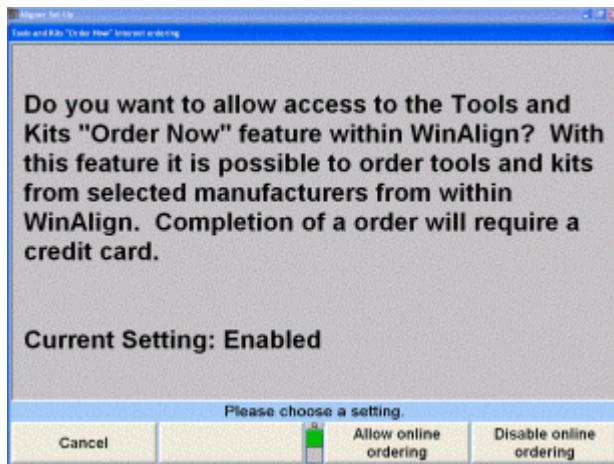


NOTICE

If VirtualView® is enabled, ride height may be viewed in bar graph or VirtualView form.

5.9.8. Setting Up Tools and Kits Internet Ordering

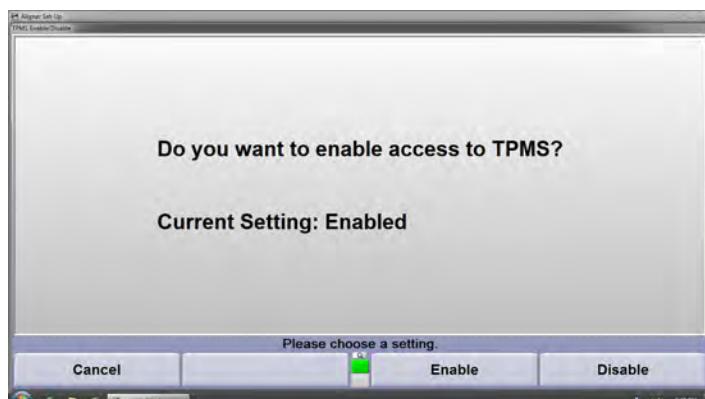
When “Tools and Kits Order Now Internet Ordering” is selected, the “Tools and Kits Order Now Internet Ordering” pop-up screen will appear.



Press "Allow Online Ordering" to access a tools and kits online ordering page within WinAlign®. Selected manufacturers products can be directly ordered from within the program. Pressing "Disable Online Ordering" will disable this function.

5.9.9. TPMS Enable/Disable

Access to TPMSpecs® within WinAlign® can be enabled or disabled in the setup option.



5.10. Inspection

When "Select Inspection Mode" is chosen, the "Inspection Mode Selection" pop-up screen will appear.



Choose either the "Part List Inspection" or "Point and Click Inspection" mode. Press ↑ or ↓ to highlight the desired entry. Press "OK" to set the default to the highlighted selection. The program will store the information on the hard drive and returns to the "Aligner Set-Up" primary screen.

The "Part List Inspection" mode is a text only view of the inspection list with the parts listed by category.

The "Point and Click Inspection" mode integrates Hunters standard parts inspection list, with digital photos and 3-D parts drawings, all on the same screen.

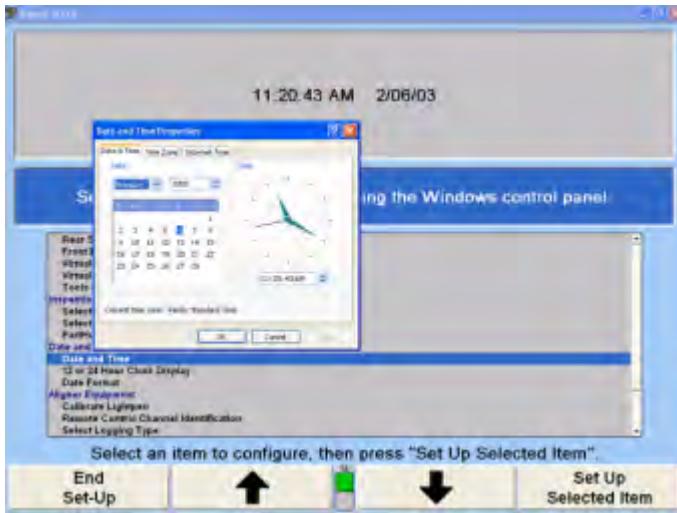
5.11. Date and Time

This selection sets the computer clock and calendar using Windows® Date and Time control panel. The Windows Date and Time panel will open and provide dialog box and options to enter the correct date, time, and time zone.



NOTICE

The Date and Time windows will vary depending on the operating system in use on the aligner.



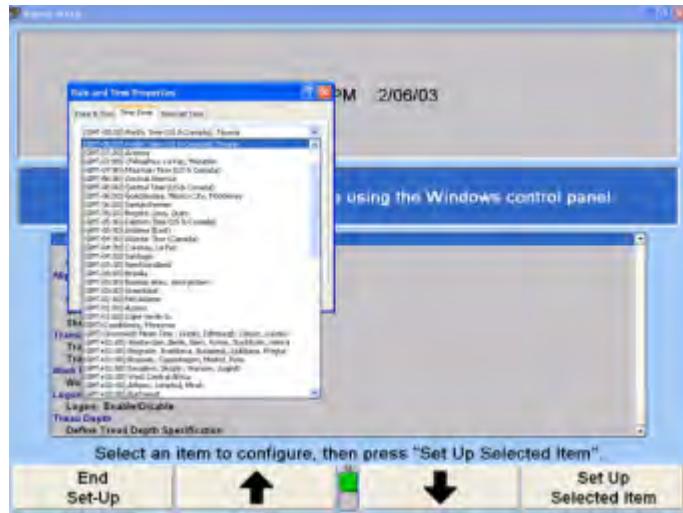
The cursor appears in the month field of the "Date & Time" when the window opens. The month may be changed by clicking on the down arrow to the right of the month dialog box and selecting the appropriate month. Typing the appropriate month in the dialog box can also change the month.

Tab once and the cursor will move to the year field. The year can be changed by typing in the correct year in the dialog box or by using the arrow buttons to the right of the box.

Tab to move to the calendar box. Use the arrow keys, mouse, or other pointing device to select the appropriate date.

Tab to move to time dialog box. The time can be set by either typing the correct time or using the arrow keys to the right of the dialog box and scrolling to the correct time.

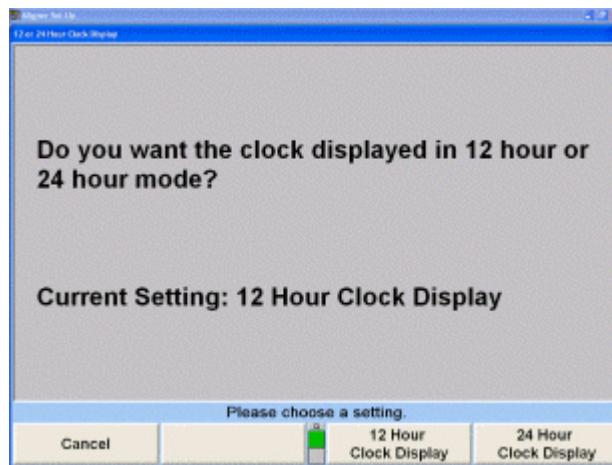
To set the appropriate time zone, select the "Time Zone" tab. The "Time Zone" window opens with the cursor positioned in the "Zone" dialog box. Use the down arrow to the right of the box to select the appropriate time zone. At the bottom of the screen is a check box to enable or disable automatic adjustment for daylight savings time. If the box is checked, Windows will automatically adjust the time changes for daylight savings time.



When all of the time and date options have been selected, press the "APPLY" button at the bottom of the window. Then select "OK" to exit Time and Date Set-Up.

5.11.1. Setting Up the 12 or 24 Hour Clock Display

When "12 or 24 Hour Clock Display" is selected, the "12 or 24 Hour Clock Display" pop-up screen appears.



Press "12 Hour Clock Display" to set the clock on the logo screen to display in a 12 hour format.

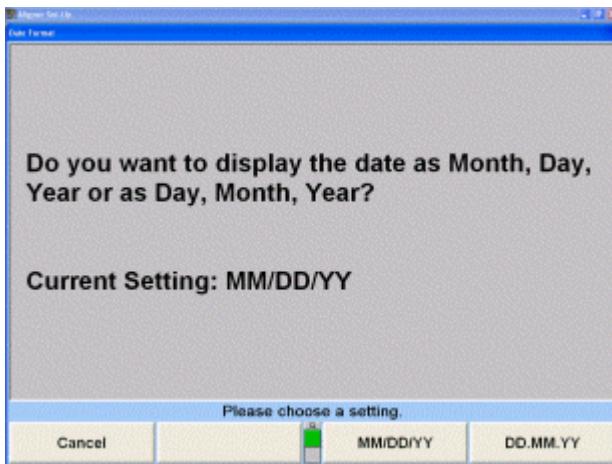
OR

Press "24 Hour Clock Display" to set the clock on the logo screen to display in a 24 hour format.

The program will store the settings on the hard drive and return to the "Aligner Set-Up" primary screen.

5.11.2. Setting Up the Date Format

When "Date Format" is selected, the "Date Format" pop-up screen will appear.



Press "MM/DD/YY" to display the date as month, day, and year or "DD.MM.YY" to display the date as day, month, and year.

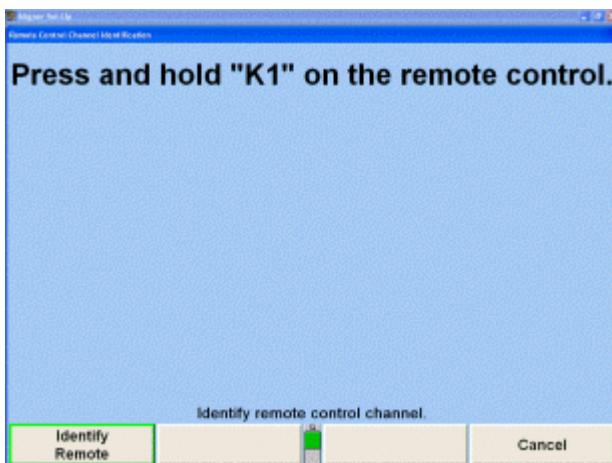
The program stores the setting on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.12. Aligner Equipment

Aligner equipment available for set-up includes file logging, automatic reboot and aligner shutdown options.

5.12.1. Setting Up the Remote Control Channel

When "Remote Control Channel Identification" is selected, the "Remote Control Channel Identification" pop-up screen will appear. Press and hold "K1" on the remote control when prompted.

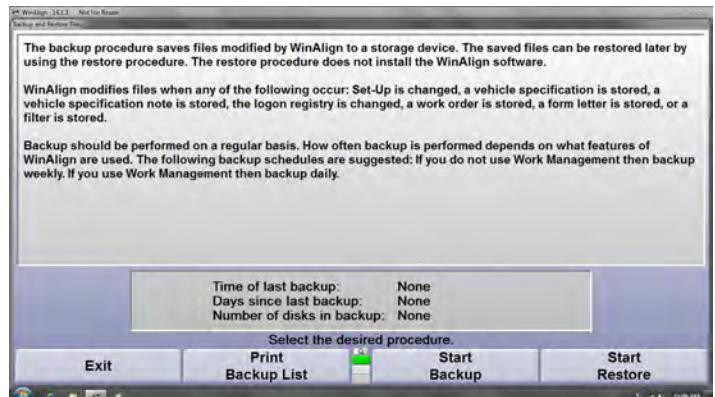


The display will prompt with the message, "The remote control channel has been successfully updated". Select "OK" by pressing "K4" on the remote or by the softkeys on the keyboard. After setting the remote's identification, the aligner will return to the "Aligner Set-Up" screen.

5.12.2. Setting Up the Logging Type

Logging can help the service representative to determine how this aligner is being used and diagnose problems. This information is saved to a file(s) on the computer hard drive.

When "Select Logging Type" is selected, the "Select Logging Type" pop-up screen will appear. This selection will Set-Up the aligner program to use "No Logging", "Standard Logging" or "Full Logging".



The "No Logging" mode will not record any logging information on your system. The "Standard Logging" mode will record statistical information on your system. This information will allow the service representative to determine how your aligner is being used. The information is stored in C:\ProgramData\Hunter\Aligner\AlignerData\STATLOG.TXT

The "Full Logging" mode will record statistical and debugging information on your system. This information will allow the service representative to determine how your aligner is being used and to diagnose problems. The information is stored in C:\ProgramData\Hunter\Aligner\AlignerData\DEBUG.TXT & C:\ProgramData\Hunter\Aligner\AlignerData\STATLOG.TXT

Press ↑ or ↓ to highlight the desired entry.

Press "OK" to set the default to the highlighted selection. The program will store the information on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.12.3. Automatic Reboot of Windows



NOTICE

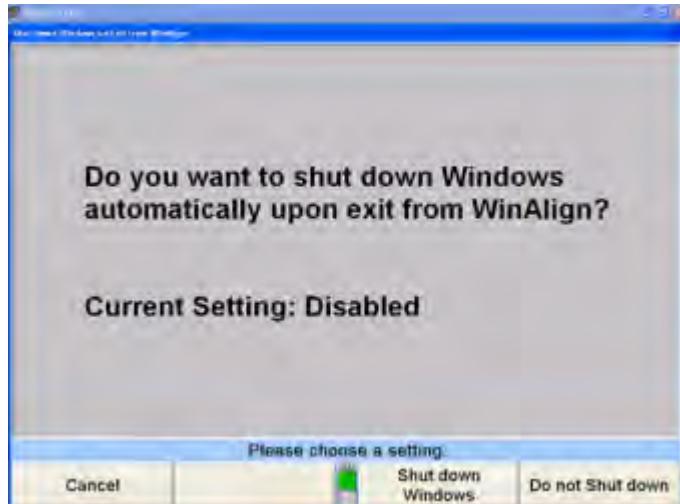
This option appears only in WinAlign® version 15.1 and newer.

This setup item is either Enabled or Disabled. When enabled, WinAlign® will shut itself down and then initiate a full Windows reboot at 3 AM every night. The USB box will not reboot – only WinAlign®/Windows. PC power will not be cycled. Any other programs that are open will be closed and any data not saved will be lost. If WinAlign® has unsaved alignment or work management data on screen, it will NOT be saved. For this feature to work, WinAlign® must be running at 3 AM.

5.12.4. Setting Up Shutdown Windows on Exit

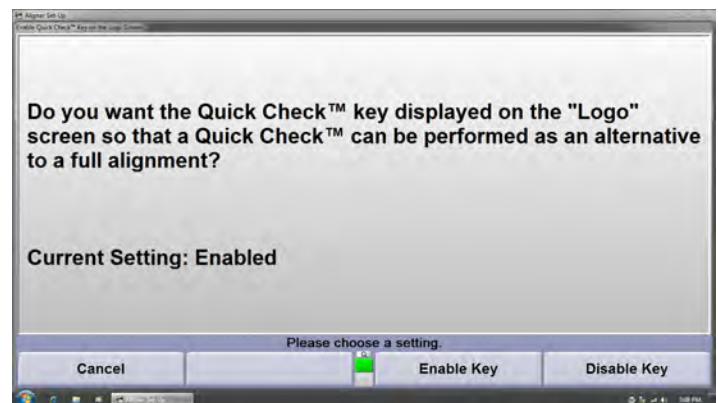
The aligner can be completely shutdown by enabling "Shutdown Windows on Exit from WinAlign®".

When "Shutdown Windows on Exit from WinAlign®" is selected the "Shutdown Windows on Exit from WinAlign®" pop-up window will appear. Select "Shutdown Windows" to completely shutdown the aligner when exiting from WinAlign®. "Do Not Shutdown" will allow the aligner to be turned off the conventional method.



5.12.5. Enable Quick Check® Key on the Logo Screen

WinAlign® 14.x and greater features support for the Quick Check® process along with standard alignments. Enabling the Quick Check® Key puts a Quick Check® option on the logo screen next to the wheel alignment option. This setting is disabled by default.

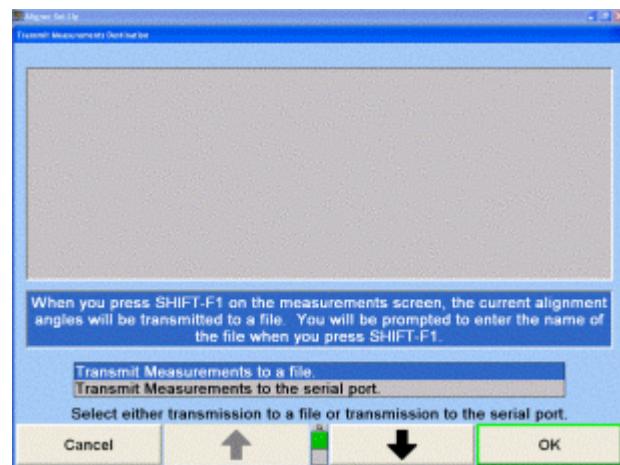


5.13. Transmitting Measurements

Transmit Measurements set-up selects the appropriate destination and format to transmit measurements and information for detailed analysis and data collection.

5.13.1. Setting Up the Transmit Measurements Destination

When "Transmit Measurements Destination" is selected, the "Transmit Measurements Destination" pop-up screen will appear.



If "Transmit Measurements to a file" is selected, the aligner will save the measurement to a file on the computer or network.

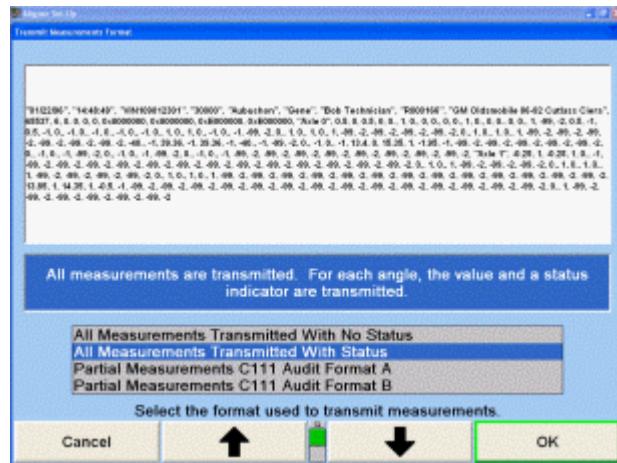
If "Transmit Measurements to the serial port" is selected, the aligner will send the measurements to the serial port. The measurements are sent at 9600 baud, no parity, 8 data bits, and 1 stop bit.

Press ↑ or ↓ to highlight the desired entry.

Press "OK" to set the default to the highlighted selection. The program will store the information on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.13.2. Setting Up the Transmit Measurements Format

When "Transmit Measurements Format" is selected, the "Transmit Measurements Format" pop-up screen will appear.



Press **Up** or **Down** to highlight the desired entry. If "All Measurements Transmitted With No Status" is selected, the aligner will transmit only the value of the angle.

If "All Measurements Transmitted With Status" is selected, the aligner will transmit the value and a status indicator of each angle.

If "Selected Measurements Transmitted With No Status" is selected, the aligner will transmit only the value for each angle. If "Selected Measurements Transmitted With Status" is selected, the aligner will transmit the value and status indicator for each angle.

If "Partial Measurements C111 Audit Format A" is selected, the aligner will transmit measurements in a format that is required by Ford.

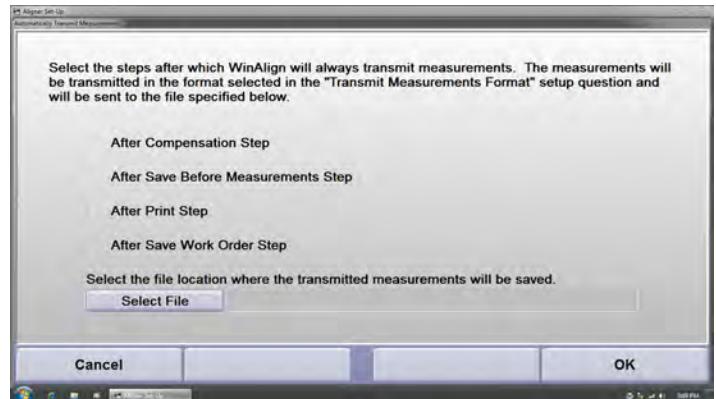
If "Partial measurements C111 Audit Format B" is selected, the aligner will transmit measurements in a format that is required by General Motors.

If "XML Format" is selected, the aligner will transmit the measurements in an XML language format.

Press "OK" to set the default to the highlighted selection. The program will store the information on the hard drive and returns to the "Aligner Set-Up" primary screen.

5.13.3. Automatically Transmit Measurements

Measurements can be transmitted automatically to a specified file at various points during the alignment. Check off the points for measurements to be sent and specify the file location.



5.14. Work Management

Work Management set-up selects basic formats for the work order, and provides the option of building a customized work order.

5.14.1. Setting Up the Work Order Format

When "Work Order Format" is selected, the Work Order Format Selection pop-up screen appears offering a choice of styles in work order formats as follows:

Format 1:	This format includes work order items appropriate for most US shops, including State. The customer is listed with the given name first, then the family name.
Format 2:	This format has work order items appropriate for most non-US shops. The customer name is listed with the family name first, then the given name.
Format 3:	This is a concise format for non-US shops. The customer name is listed with the family name first, then the given name.
Format 4:	This format has work order items appropriate for most shops in the Far East/Asia. Formatting of customer name and address follow Far East conventions.
I-Shop Shop Management:	This option enables i-Shop Compatible i-Shop Shop Management.
Custom Forms (Default):	Enables Automatic Recall Shop Management and allows the user to customize work order format.

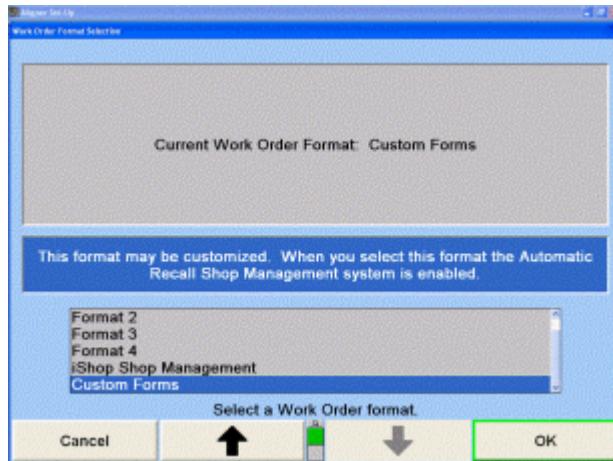
The pop-up screen indicates the current work order format. The default setting is for Custom Forms. To change formats, use the arrow keys to highlight the appropriate work order format and select "OK".

5.14.2. Setting Up the Custom Work Order Format

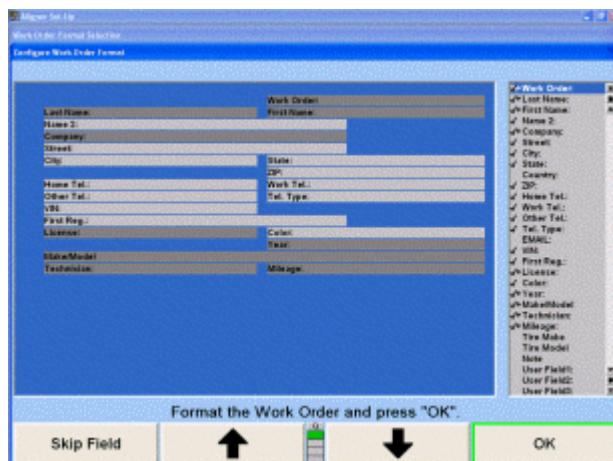
The Custom Work Order Format is the default Work Management setting.

From Aligner Set-Up, highlight “Work Order Format” and select “Set-Up Selected Item”.

From the Work Order Format Selection, select “Custom Forms”.

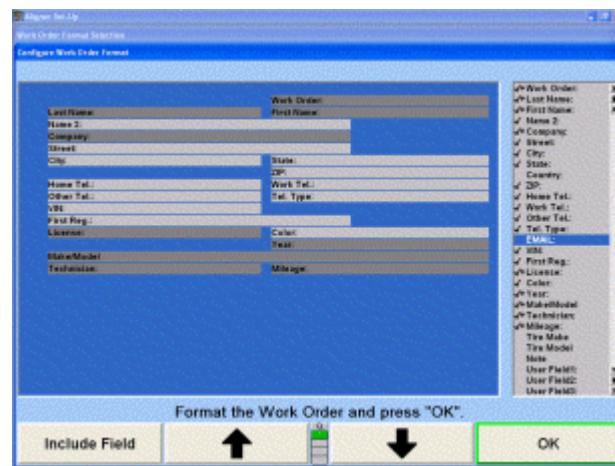


Selecting “Custom Forms” allows you to format the work order to include and determine the fields of your choice. A **ü** to the left of the field identifies that the field is being included on the work order. A **+** to the left of the field identifies that the field requires a mandatory entry before it is completed.

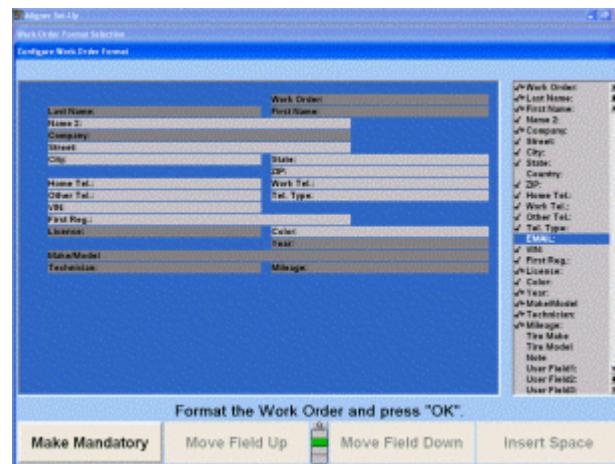


In the Configure Work Order Format screen, the pointing device or the arrow keys can be used to select a work order field.

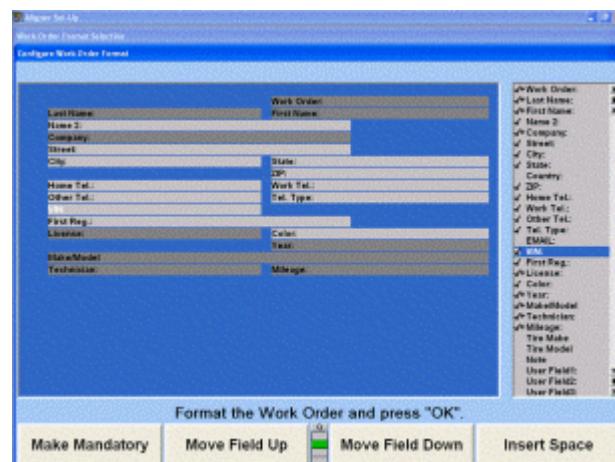
To include a field that is currently not included on the work order, highlight the desired field in the list box and select Include Field.



To make a field mandatory or to include a field but not require mandatory entry, highlight the desired field and select Make Mandatory/Make Non-Mandatory.

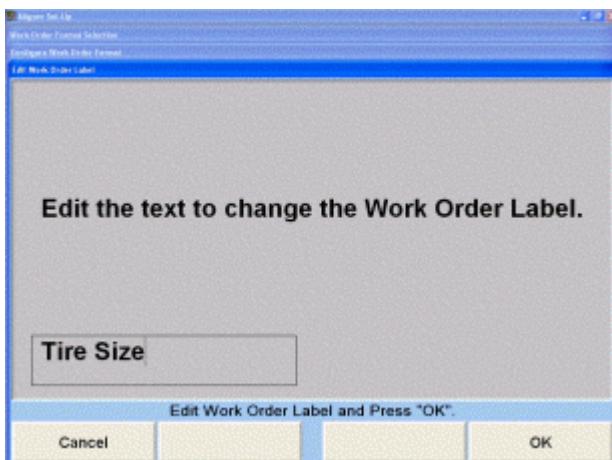
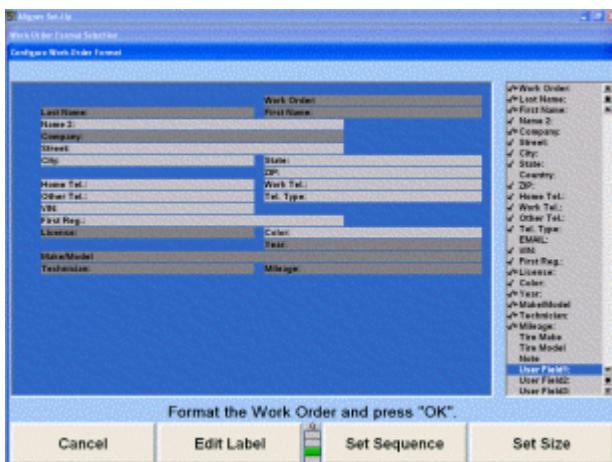


To rearrange the work order format, you may select to Move a Field Up or Move a Field Down. Spaces can also be inserted into the work order by selecting “Insert Space”.

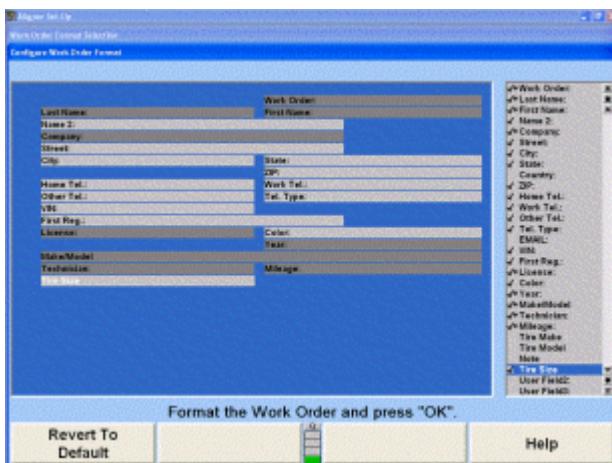


There are also four user editable fields that can be customized for any data entry required.

Highlight the field to be edited, and select "Edit Label". The Edit Work Order Label screen will appear. Type in the desired label and select "OK". The following example created a label for Tire Size to be used with the other tire identification fields.



When work order format changes are completed, select "OK". To return the work order format to the initial default Set-Up, select "Revert To Default".



5.14.3. AutoVIN with Work Management and Custom Forms

To use AutoVIN with custom forms, select the custom form work management format in WinAlign® setup. In order to avoid requiring the user to enter fields such as customer name, technician name, and mileage fields, those fields need to be marked as "Non Mandatory". Use the custom form configuration screen and select "Non Mandatory" for these fields.

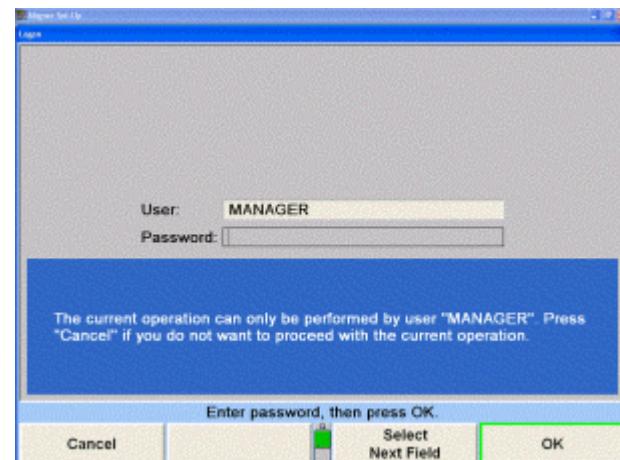
Once AutoVIN has been configured the user just needs to scan a VIN code while the aligner is at the logo screen. WinAlign® will proceed to the Work Management "custom form" screen. The VIN field will be populated and the vehicle selected will be displayed.

Add any additional information if needed and then press "OK" to proceed to compensation and then to the alignment.

5.15. Login

5.15.1. Setting Up the Logon Option

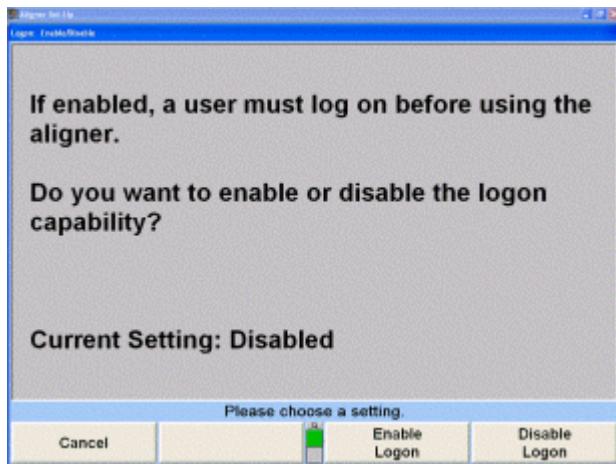
When "Logon: Enable/Disable" is selected, the "Logon" pop-up screen appears.



NOTICE

The User field is preset to MANAGER and cannot be changed. Only the password may be entered.

If the password is correct, the "Logon Enable" pop-up screen will appear with the current setting on the screen.



Press "Enable Logon" to enable this option. This will require users to log on to the aligner program to perform an alignment. A pop-up screen will appear reminding you to change the password for the MANAGER logon.

Press "OK".



NOTICE

After logon is enabled, the password for the MANAGER logon should be changed from the initial password using the "Logon Password" function of Set-Up. Please record the new password for future use.

OR

Press "Disable Logon" to disable this option. Users may perform alignment without having to log on.

The program stores the setting on the hard drive and returns to the "Aligner Set-Up" primary screen.

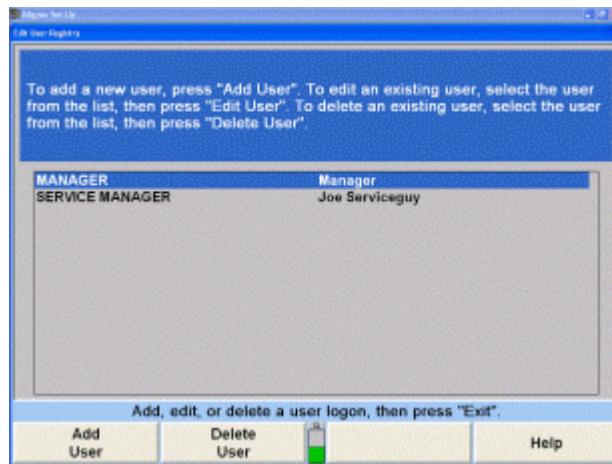
5.15.2. Setting up the Logon Registry



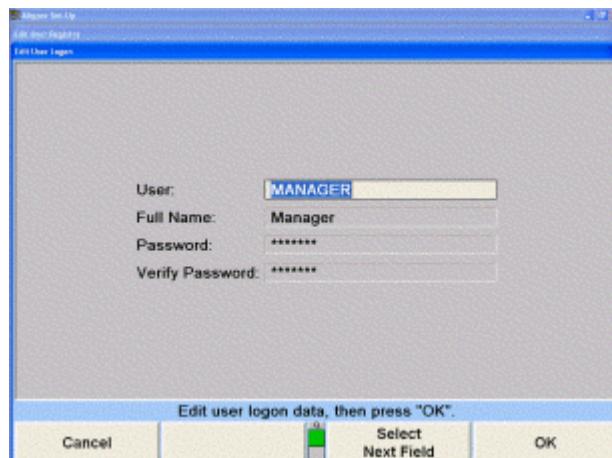
NOTICE

This item appears only when the MANAGER has logged on.

When "Logon Registry" is selected, the "Edit User Registry" pop-up screen appears with the current list of users displayed.



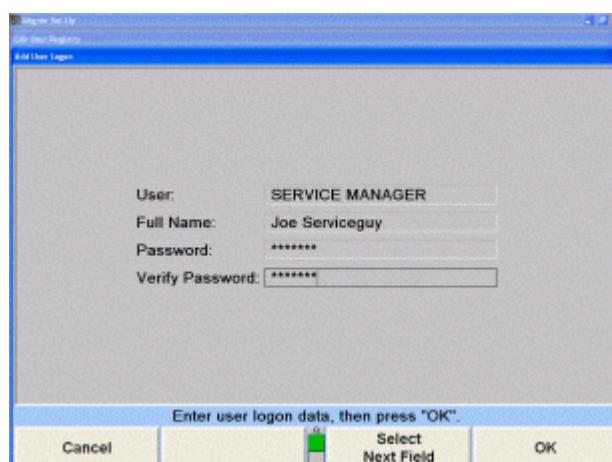
Press ↑ or ↓ to highlight the desired entry. Press "Edit User" to make changes to the highlighted entry. The "Edit User Logon" pop-up screen will appear.



Press "Select Next Field" or "Enter" to move the cursor to the field or fields to be altered. Make the desired changes, and then press "OK". The screen will return to the "Edit User Registry" pop-up screen.

OR

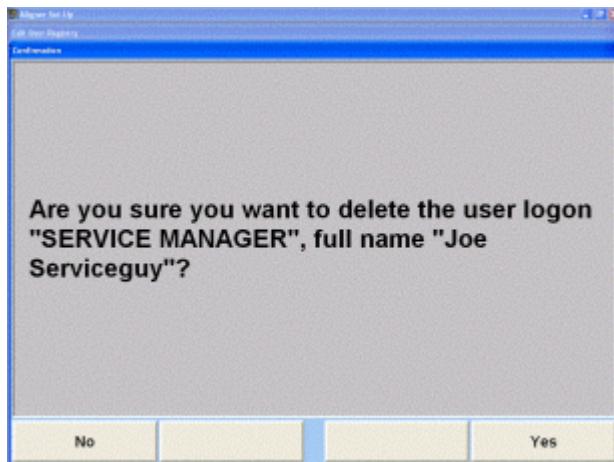
Press "Add User" to add a user to the registry.



Enter the information requested, and then press "Select Next Field" or "Enter" to move the cursor to the next field. Select "OK", after all fields are complete. The screen will return to the "Edit User Registry" pop-up screen.

OR

Press "Delete User" to delete the highlighted entry from the logon registry. A confirmation pop-up screen will appear.



Press "Yes" to delete the entry from the logon registry or press "No" to keep the entry in the logon registry.

The screen will return to the "Edit User Registry" pop-up screen. Press "Exit". The program returns to the "Aligner Set-Up" primary screen.

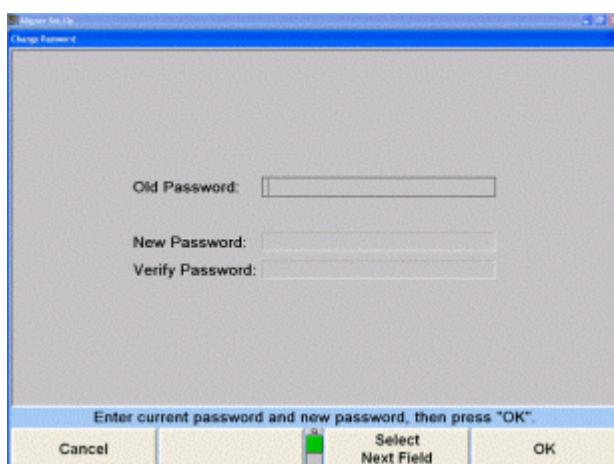
5.15.3. Setting Up the Logon Password



NOTICE

This item appears only when Logon is enabled.

When "Logon Password" is selected, the "Change Password" pop-up screen appears.



In the "Old Password" field, enter the old password, and then press "Select Next Field" or **ENTER** to move the cursor to the next field.

In the "New Password" field, enter the new password, and then press "Select Next Field" or **ENTER** to move the cursor to the next field.

In the "Verify Password" field, enter the new password again, and then press "OK". If the entries in the "New Password" and "Verify Password" fields do not match, an error message will appear asking to re-enter the password.

If the entries in the "New Password" and "Verify Password" fields match, the program stores the setting on the hard drive and returns to the "Aligner Set-Up" primary screen.



NOTICE

A password is not required for users.

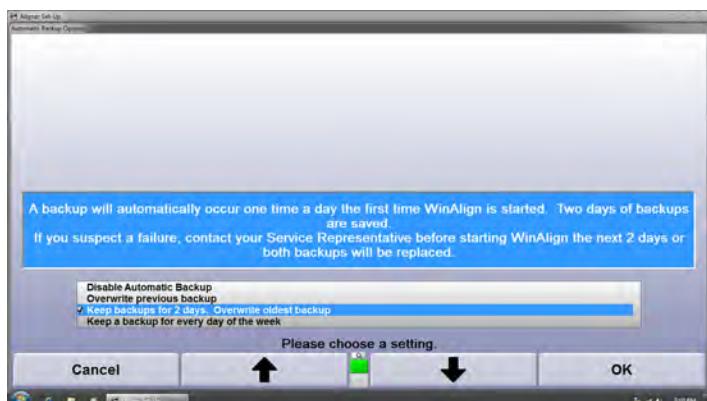
5.15.4. Setting Up Automatic Backup Options



NOTICE

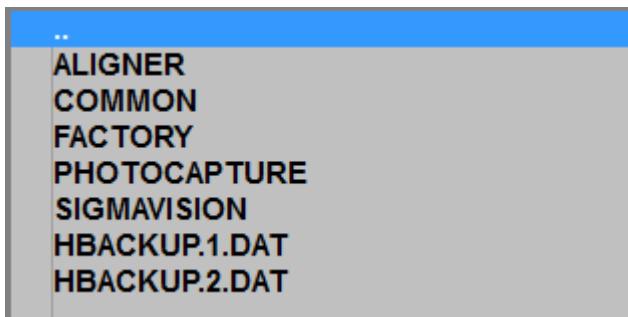
This item appears only when "Logon" is enabled. Even though Automatic Backup may be set, manual backups should still be performed on a regular basis.

To choose how WinAlign® handles automatic backups or disable them completely, select "Automatic Backup Options". Choose from the list of options, select "OK" when finished.



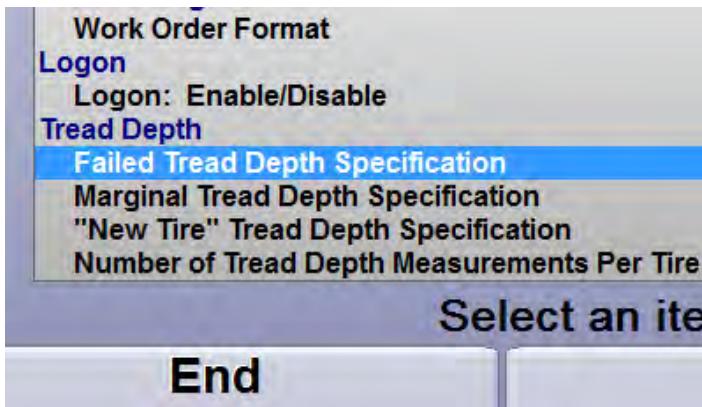
The backup location is displayed on the main setup screen when "Automatic Backup Options" is highlighted. To change this location, double click "Automatic Backup Options", then select "Change Directory" from the second row of softkeys.

Navigate to the desired location then select "OK". Double clicking ".." at the top of the list steps backward one level.



5.16. Tread Depth

5.16.1. Setting up Tread Depth Specifications



Tread depth setup is at the bottom of the items list, the default values for "Failed", "Marginal" and "New" tires are:

Failed Tread Depth Specification	2/32 in. (1.6 mm)
Marginal Tread Depth Specification	4/32 in. (3.2 mm)
"New Tire" Tread Depth Specification	12/32 in. (9.5 mm)

Enter tread depth values per local D.O.T. safety laws, manufacturer recommendations or individual shop recommendations.

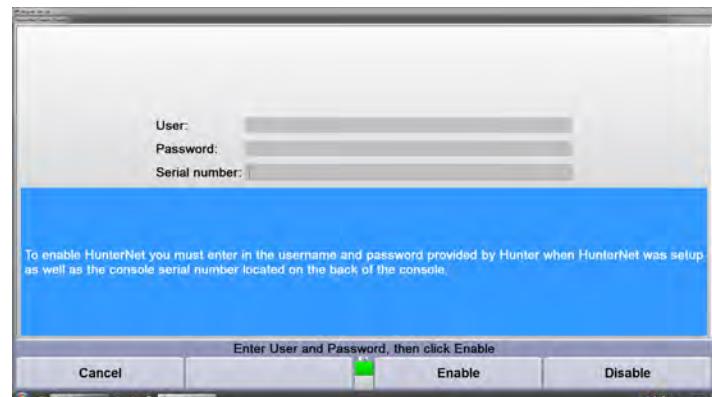
5.16.2. Number of Tread Depth Measurements Per Tire

This option sets up the default measurement procedure to a one point or three point measurement for both the handheld tread depth tool and manual entry methods.

5.17. HunterNet® Items

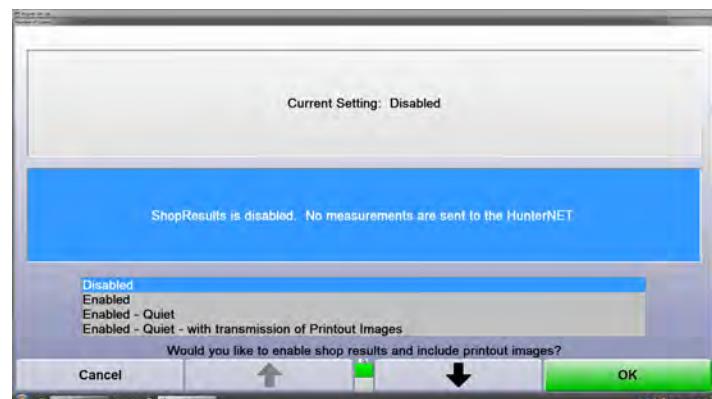
5.17.1. HunterNet®: Enable/Disable

Enter the customer's HunterNet® user name and password to enable automatic login to HunterNet® even after restarting the computer.



5.17.2. ShopResults.net

When enabled, a step is added to the end off the alignment process in which results are sent to HunterNet®. Multiple options are available, choose the desired option based on their on-screen descriptions.



NOTICE

A HunterNet® subscription is required for ShopResults to function.

5.17.3. HunterNet® Data Collection

Leave this setting disabled, this setup option should only be enabled on the advice of a Hunter Representative.

5.17.4. Send ShopResults After Compensation

Enabling this option will send results to HunterNet right after compensation when performing an alignment. This is basically a Quick Check® on the aligner. Results will be sent whether or not the technician proceeds with an alignment.

If ShopResults is enabled after alignment, a separate set of results will be sent to HunterNet after completion of an alignment on the vehicle.

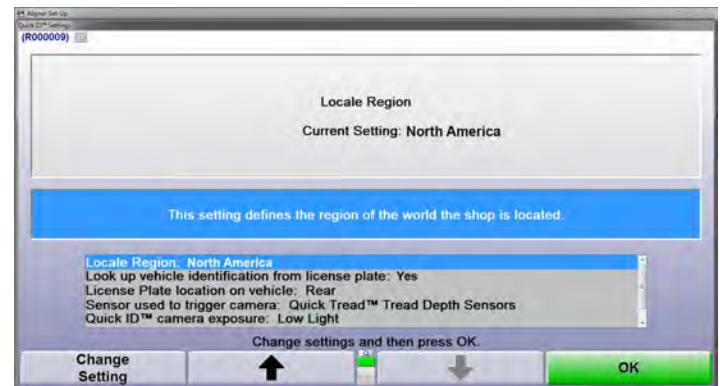
5.17.5. Computer Network Routing

This setup option configures the way the console connects to the internet. Choose wired or wireless depending on the connection method at the console. Administrator login credentials are required at this step.



NOTICE

The "Administrator" account was re-named to the "Hunter" account beginning in version 15.1. The password and permission level of the "Hunter" account remains the same as it was in the "Administrator" account.



Select "OK" when the proper selections have been made.

5.18.2. Advanced Configuration & Diagnostics



NOTICE

These advanced configuration & diagnostic procedures are intended for Hunter service representatives only.

5.18. Quick ID Setup



NOTICE

Quick ID is a Quick Check accessory, this option appears only inside Quick Check setup.

5.18.1. Basic Setup

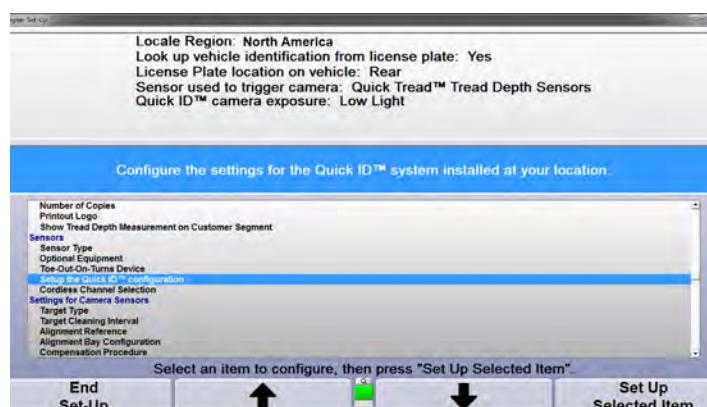
If equipped, enable "Quick ID™ License Plate Recognition System" under "Optional Equipment".

After initial settings are chosen in WinAlign® setup, advanced configuration must be performed within "Sensor Diagnostics". These steps are performed when Quick ID™ is installed for the first time and typically do not require adjustment. However certain situations may warrant additional adjustment.

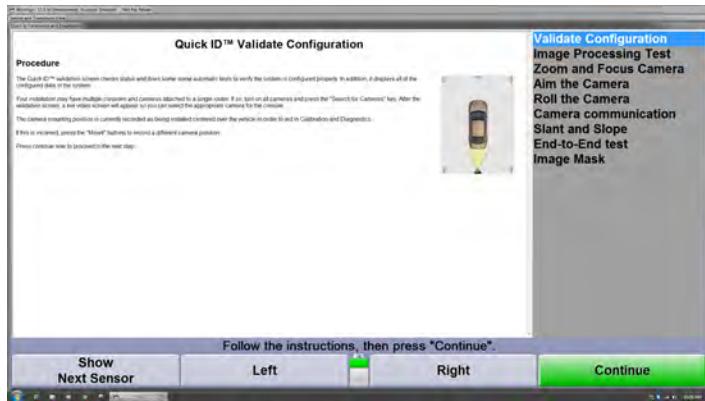
For example, if the camera is moved it may need to be re-aimed and zoomed. If signage is added to a service drive that enters the camera's field of view, the image mask may need to be adjusted.

To access the Quick ID™ configuration from the logo screen, select "Service Programs" and "Calibrate Aligner" and "Calibrate Quick ID".

Select Sensor Type	Aim Cameras	Characterize Targets	Calibrate Cameras
Select Target Type	Check Calibration	Precompensate Targets	Precompensated Calibration Check
Begin ADR Adjustment	OEM Audit Mode		Clear Target Precompensation
Target Rotation Test	Level Calibration Bar		Set Replacement Camera Identity
	Distance Calibration		Calibrate Quick ID™
Make Camera Replacement	Modify Factory Calibration	End Calibration	Help



Initial settings for Quick ID™ are located in the "Sensors" category, select "Setup the Quick ID™ Configuration". Choose the setup options according to the particular Quick ID™ system connected to the console. Highlight each option then select "Change Setting" to toggle between the choices.



Follow the on-screen instructions at the each step using the "Continue" button to advance the process.



NOTICE

It is recommended to complete each of the steps in order, beginning with the "Validate configuration" step.

Validate Configuration

Upon selecting "Validate Configuration", the system will run a security and camera validation test. A summary is generated that includes the HunterNet® credentials, communication test results, camera and WinAlign® settings.

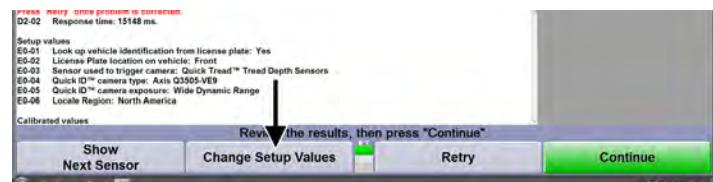
Review this summary and correct any errors before continuing with the rest of the process.



NOTICE

Lines with errors present appear in red. Refer to the 4 digit alpha-numeric line code when relaying troubleshooting information to Hunter Engineering.

If necessary, select "Change Setup Values" to bring up the Quick ID™ setup menu. Set the Quick ID™ settings according to the particular system installed at the console.



Continue through the rest of the process by following the on-screen instructions and pressing the "Continue" button.

Detailed instructions are provided on screen for each of the steps, follow these instructions to properly configure the camera.

5.19. iShop Setup



NOTICE

Integration through iShop is a Quick Check function, so it needs to be enabled inside Quick Check setup.



NOTICE

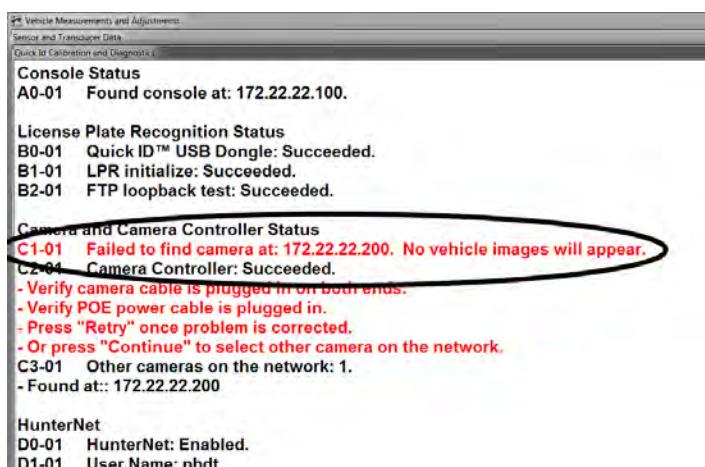
For detailed instructions, refer to form [7099-T](#)

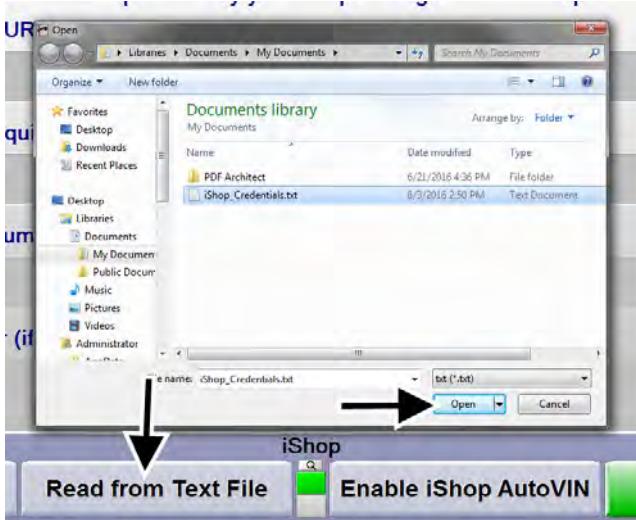
Inspection results integration with various third party software companies is available through a communication protocol known as iShop.

The following procedure applies only to locations using an approved integration partner.

1. Within the setup menu, select Common Alignment Preferences.
2. Enable "iShop Shop Management" and enter the iShop credentials using the "Read from Text File" option. Upon selecting "Read from Text File", navigate to the location of the text file and select "Open". The text file is available using the Integration Partner App, it is also included in the e-mail sent by the Integration Partner App.

Security Token and equipment information are not necessary unless required by the integration service.





These fields may also be filled out manually, use caution to enter the credentials exactly and delete any extraneous spaces at the end of the fields.



NOTICE

Make sure to remove all spaces and enter keystrokes at the end of each field by pressing the delete key at the final character in the field.



- After clicking OK, a confirmation message should appear saying that the iShop server connection was successful, select OK.
- Run a test vehicle check and make sure the machine is submitting results to the iShop server.



NOTICE

The screen below may only appear momentarily as the data is saved.

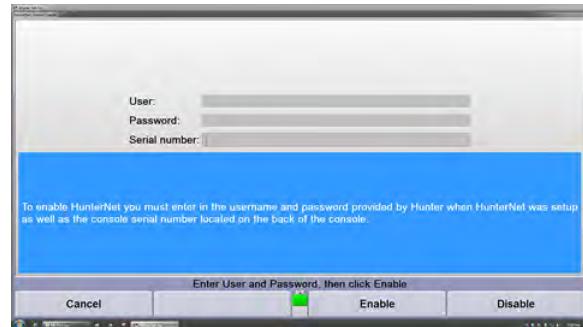


- Contact the integration partner or check their local software to verify the Hunter data was received

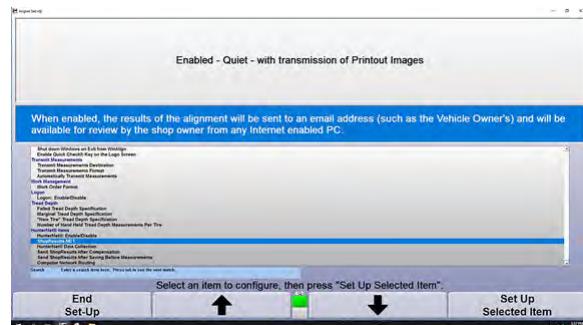
properly. If the Hunter data is not received by the integrator, refer to the *iShop Setup and Diagnostic Guide 7212-T*.

5.20. asTech ADAS Device Set-up

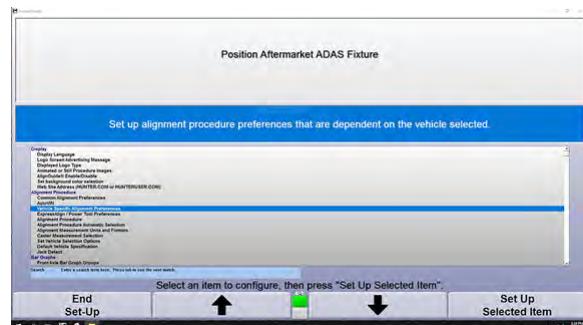
- Enable HunterNet® in WinAlign®.



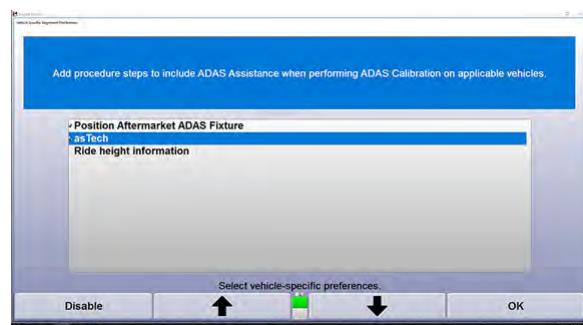
- Enable ShopResults® in WinAlign® with setting “Quiet with transmission of Printout Images”.



- Go to → Vehicle specific alignment preferences



- Enable “Position Aftermarket ADAS Fixture”
- Enable “asTech”



6. Detailed Operation Information

6.1. Primary and Popup Screens

There are four primary screens used during a typical alignment job. They are:

- Vehicle Specifications
- Vehicle Measurements and Adjustments
- Vehicle Inspection
- Work Management

When a primary screen is showing, there is only a single title bar across the top of the display. For example, see the following "Vehicle Measurements and Adjustments" primary screen.



You can change the display to one of the other primary screens by pressing a softkey

OR

Press the ← or → on the keyboard.

OR

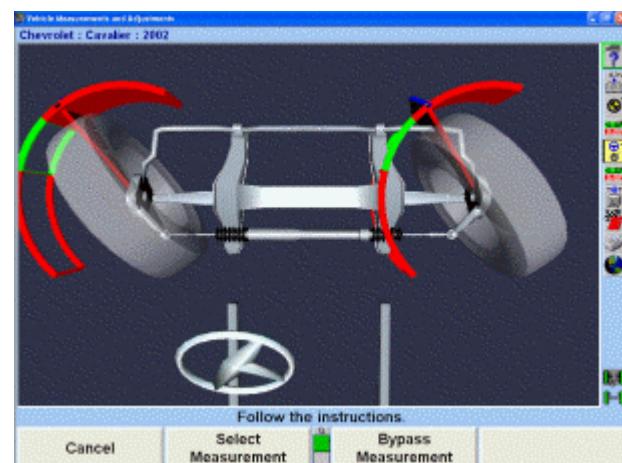
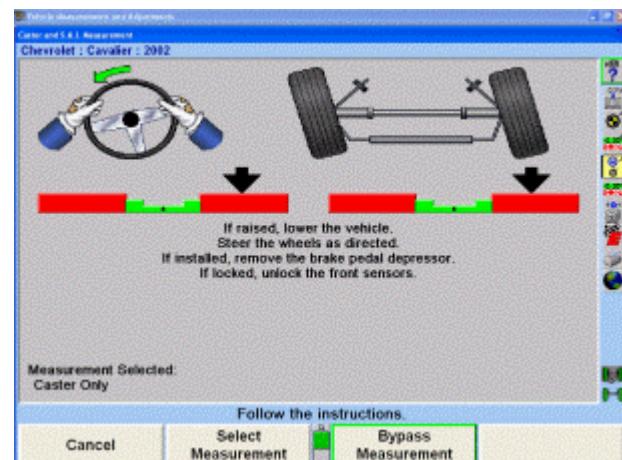
Select the appropriate icon from the Procedure Bar. Since there are four primary screens, only four softkeys are needed to do this. For example, when showing the "Vehicle Measurements and Adjustments" primary screen, the second row of softkeys are:



Popup screens are so named because they pop-up over primary screens or over other pop-up screens. To perform an operation, such as recalling specifications from the

database or measuring caster, press the softkey with the corresponding label. A pop-up screen pops up over the current screen to perform that operation, and the softkeys change to those needed to support the operation.

For example, the "Measure Caster" pop-up screen pops up over the "Vehicle Measurements and Adjustments" primary screen.



When a pop-up screen appears, the only actions available are:

- Perform the operation
- Skip the operation (on some screens)
- Cancel the operation (on most screens)

When the operation is complete, skipped, or canceled, the pop-up screen disappears, revealing the primary screen from which it appeared. Two very important aspects of this scheme are:

The pop-up screen does not "hide" the screen over which it pops up. It leaves the title bar of that screen exposed,

so you can view the context in which that pop-up screen is used.

The pop-up screen has a softkey menu that supports only the operations required by that screen. This greatly simplifies the menus of the primary screens, and makes it much easier to control the operation of any pop-up screen.

6.2. Log On

The Log On option provides a way to identify the user. The primary use of log on is to allow a user to customize alignment program settings according to his or her preferences in the setup program. For example, Bob logs on to WinAlign® and changes the toe display format to degrees, performs a number of alignments, and then logs off. When Bob logs on in the future, his toe display format setting will be restored. All other users will not be affected by Bob's format preference.



NOTICE

The Log On option is not a security system. It is only a way to identify users and allow the user to customize the settings.

The log on capability can be enabled or disabled in the setup program. The log on default is "Disabled".

6.2.1. Types of Log On

The log on feature supports two different log on types; Manager log on and User log on.

A user is anyone who performs alignments using the WinAlign® program. A log on identifies the specific alignment program structure requested by the user.

The manager log on is typically used by one person. This person has administrative privileges within the system.

Manager Log On

There is only one log on "MANAGER". The "MANAGER" log on can not be deleted or renamed and is typically assigned to the owner, service manager, or supervisor.

The MANAGER log on has more setup items than a user log on and is the only log on that can enable or disable the log on feature or add, change, or delete other log on users.



NOTICE

The password for the MANAGER is MANAGER. After log on is enabled, the password for the MANAGER log on should be changed. Record the new password for future use.

User Log On

The "Log On" option supports multiple users. Typically, each alignment technician would be assigned and use their own user log on.

6.2.2. Setup Items

When a user who is logged on changes a setup item, the change affects only the program structure for that specific user. However, when a setup item is changed using the "MANAGER" log on, the change affects all users with a log on that have not set up the item selected by the manager.

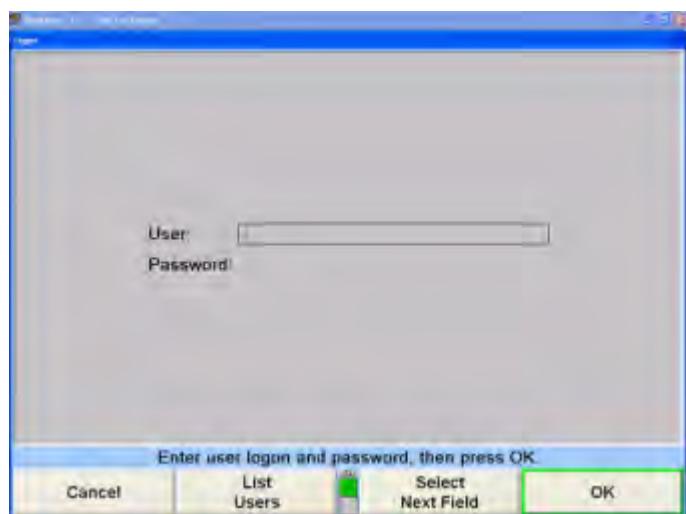
For example, using the manager log on, Fred changes the toe display format to degrees and minutes, and then logs off. Jim has not set up the toe display format, so when he logs on, the toe display format will be degrees and minutes. Bob had already selected toe units in degrees so, when he logs on, the toe display format will be degrees.

6.2.3. Logging On

The log on feature does not distinguish between upper case and lower case letters for log on names or passwords. For example, if the password "ILOVEWinAlign®" is entered as "ILoveWinAlign®", this will be accepted as a valid password.

When log on is enabled, the "Begin Alignment" key on the logo screen is replaced with "Log On".

Press "Log On". The "Log On" pop-up screen will appear.



From the keyboard, enter user name in the User field.

Press or "Select Next Field" to move the cursor to the "Password" field. Enter the password. For each character entered in this field, an asterisk (*) will appear. This prevents anyone from reading the password.

If the password is not correct, an error message will appear. Press "OK", then re-enter the password.

When a user has logged on successfully, the logo screen will appear.

6.2.4. Logging Off

Resetting the aligner will not log off a user. Turning the alignment console off will log off a user.

To log off, press "Log Off" on the logo screen.

6.2.5. Log On Registry

When log on is enabled, only users that appear in the log on registry may log on to WinAlign®. Users may be added or deleted from the log on registry by using the Set Up Aligner function. Only the "MANAGER" can add or delete from the log on registry.

The registry contains the following information for each user that has been assigned a log on name:

Log On Name	A short name used to identify the user. This name is what the user types into the Log On pop-up screen.
Full Name	The users full name. This name will appear on the Customer ID screen to identify the Technician and on the reset screen as the current user.
Password	A password to protect the user from having their identity misrepresented. Passwords are never displayed and can be left blank if desired.
User Number	A number that represents each user in the configuration database.



NOTICE

A password can be changed by the individual user. Only the MANAGER may add, change, or delete users from the registry.

6.2.6. Log On Password

When log on is enabled, users that appear in the log on registry may log on to WinAlign®. Users may change their password by selecting "Log On Password" from Aligner Setup.

6.3. Work Management Database

6.3.1. Work Management Overview

Work Management provides a database for storing work orders, customer identification, and vehicle identification.

Work Management also provides methods to store and recall customer and vehicle identification. This identification is then referenced by work orders.

Beginning with WinAlign® 14.1 "Work Management" and "Edit Customer Information" features have been split up resulting in a new way to store and recall alignment data. Enabling only "Work Management" will automatically store alignment data but requires no customer data entry by the tech. Work orders can then be recalled using the date, time, vehicle and VIN if it was scanned in. "Work Management" by itself no longer causes the customer information screen to appear. "Edit Customer Information" must now be enabled for the customer information screen to appear.

Enable	Configuration
Work Management and Edit Customer Information	Save alignment and customer data. Edit Work Order prompt appears at the beginning of alignment or after caster steer.
Work Management only	Save alignment data only, no prompt to enter customer or work order data.(These can still be entered later in the alignment process).
Edit Customer Information only	Does not save alignment data but customer information will appear on the printout. Edit Customer Information prompt appears at the beginning of alignment or after caster steer.

If Work Management is enabled in Setup under the "Common Alignment Preferences" then all facets of Work Management are easily accessible from the second row of softkeys on the logo screen.



Work Management is also available throughout the entire alignment process.

If ExpressAlign is used, the option to edit the work order will be available after completing the alignment at the "Save Current Work Order" step.

The default format setting for Work Management is "Custom Forms". The information that is entered and its arrangement/order in the Custom Forms format is editable within [Setup \[168\]](#).

Format 1 is also applicable for most U.S. shops, however has a different user interface than Custom Forms. The Work Management form contains three sections:

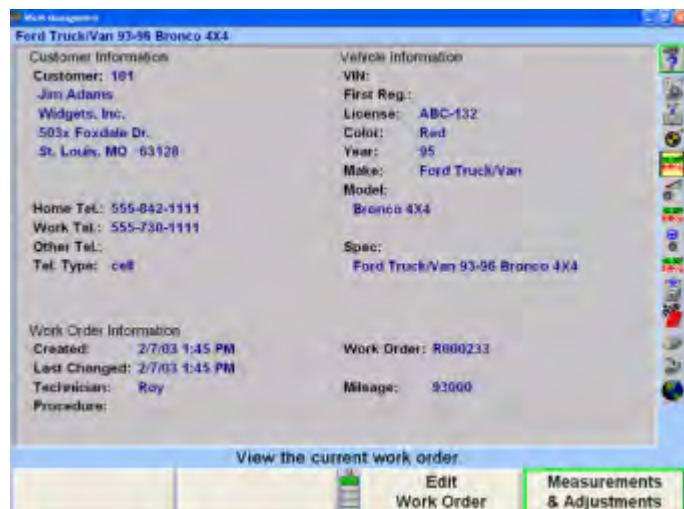
Customer Information	Vehicle Information	Work Order Infomration
customer number	VIN	date created
first and last name	license	date changed
second contact name	color	work order number
company name	year	technician identification
address	make	vehicle
home phone	model	mileage
work phone	vehicle alignment specification ID	note (this feature is added separately)
other phone		alignment procedure
telephone type		



NOTICE

Mileage is stored in the work order and not in the vehicle identification section.

The “Work Management” primary screen shows a summary of the work order. The information contained in the “Work Management” primary screen will depend on whether or not the work order has been edited.



6.3.2. Custom Forms (Default Format)

The “Custom Forms” format is the default customer identification and work order format. When entering information using Custom Forms, the system recognizes if the customer has been previously entered into the system, WinAlign® will alert the operator so that all of the existing information can be transferred into the new work order thereby eliminating additional data entry.

6.3.3. Entering Customer Information

Customer information can be entered on the “Edit Customer Information” screen or “Edit Work Order” pop-up screen. The “Edit Customer Information” screen provides a way to type information that will appear on a printout. The “Edit Work Order” screen does the same thing except the information is also saved so it can be recalled in the future.

The “Edit Customer Information” screen can be set up to appear at the beginning of the alignment or after caster is measured by enabling the steps under “Common Alignment Preferences”. Select “Edit Customer Information at the beginning of the Alignment” or Edit Customer Information after caster”.



NOTICE

Selecting both choices will cause the edit customer step to appear at both points during the procedure.

Edit Customer Information at the beginning

✓ Edit Customer Information after Caster

✓ Work Management

iShop Shop Management

Use ASANETWORK Manager

WinAlign-Tuner (Modified Vehicle)

Display of Vehicle Specifications

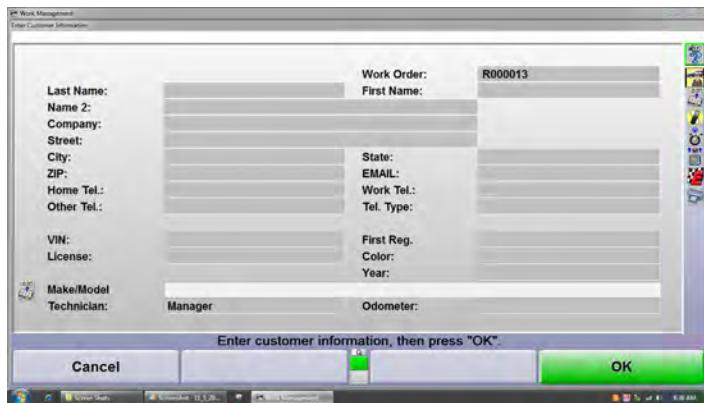
The “Edit Customer Information” pop-up screen will appear only if enabled in Aligner Setup under “Common Alignment Preferences”. The “Edit Work Order” pop-up screen will appear only if “Work Management” AND “Edit Customer Identification” are selected in Aligner Setup under “Common Alignment Preferences”.

If ShopResults.NET® has been enabled in “Setup” a field for the email address will automatically be included in the Work Order.

6.3.4. Edit Customer Information in Custom Forms

Customer information can be entered at the beginning of the alignment and/or after caster is measured depending

on what steps are enabled in "Common Alignment Preferences".



If an error is made while entering the information, press the **BACKSPACE** key to delete the last character entered.

Corrections can be made by moving the cursor to the incorrect character and re-entering. Press the right or left cursor arrow key to move the cursor to the incorrect character. Press Delete to remove the incorrect character, then press the correct character key.

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.

To remove a character, move the cursor to the left of the character and press Delete. The character will be removed and all other characters on the line will move to the left.

Press "OK" after entering the information to proceed to the next step.

If "Edit Customer Information" is not selected in "Aligner Setup" the customer information can still be added after entering the vehicle specifications by selecting "Edit Work Order" from the "Work Management" primary screen, or by selecting "Edit Customer ID" from the print preview screen.

6.3.5. Edit Work Order in Custom Forms

The "Edit Work Order" screen will appear if "Work Management" AND "Edit Work Order" is enabled in setup.

If "Work Management" and "Edit Customer Information" are not selected in Aligner Setup, the work order can still be edited after entering the vehicle specifications by selecting "Edit Work Order" from the "Work Management" primary screen.

Customer information can also be entered at any time during the alignment by selecting "Work Management" and selecting "Edit Work Order".



The cursor indicates the position where characters will appear. The headings in blue identify fields that the Work Order may be recalled by. These fields are: V.I.N., work order, customer name, company, license number. The darker shaded areas are required information and the program will not proceed until those areas have been entered.

Enter the required information using the keyboard. Press **ENTER** or **TAB** to advance to the next field. Press **SHIFT** and **TAB** to back up to the previous field.

If an error is made while entering the information, press the **BACKSPACE** key to delete the last character entered. Corrections can be made by moving the cursor to the incorrect character and reentering. Press the right or left cursor arrow key to move the cursor to the incorrect character. Press Delete to remove the incorrect character, then press the correct character key.

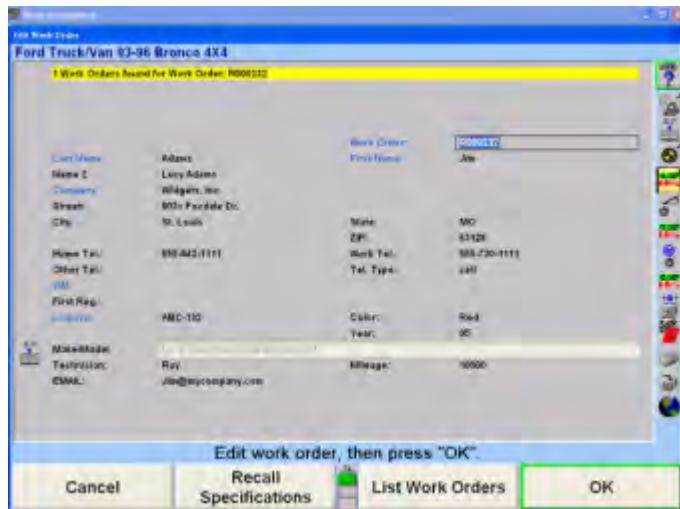
To insert a character in the middle of a word, move the cursor to the character before the position and press the character to be inserted.

To remove a character, move the cursor to the left of the character and press Delete. The character will be removed and all other characters on the line will move to the left. Press "OK" after entering the information. The display will return to the screen where Work Management was accessed, or to the next display in the alignment procedure.

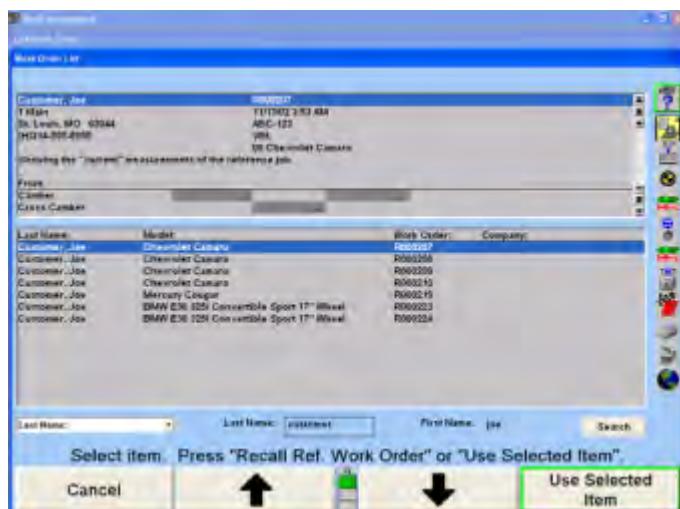
If the customer data being entered matches the data in the current database, the work order will automatically identify the number of matching work order(s) at the top of the screen. Entering additional information in the work order may narrow the selection of matching work orders.

After typing in the last name, Work Management associates work orders with the same last name. After typing in the first name it and pressing **ENTER** or **TAB** on the keyboard Work Management narrows the number of work orders and automatically displays the associated work orders.

The “List Work Orders” softkey can also be selected to view the number of work orders identified by the yellow highlighted note at the top of the screen.

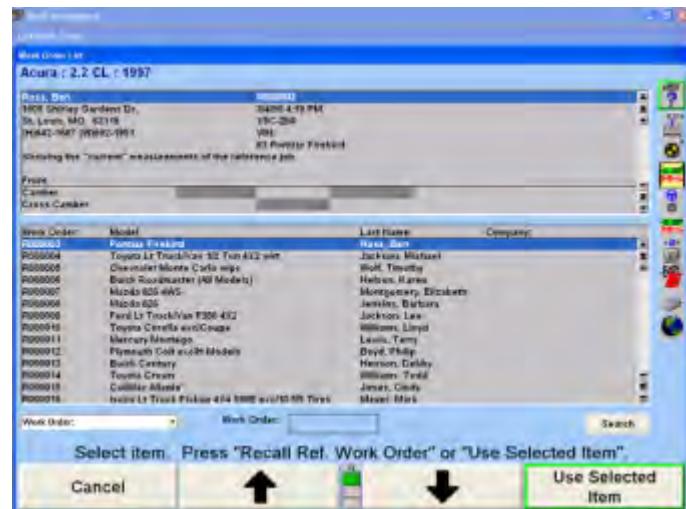


If a previous work order for the customer is found, press “Use Selected Item” to copy all of the customers’ information to the current work order. Fill in any additional information required, then press “OK” to continue with the alignment process.



6.3.6. Listing Work Orders

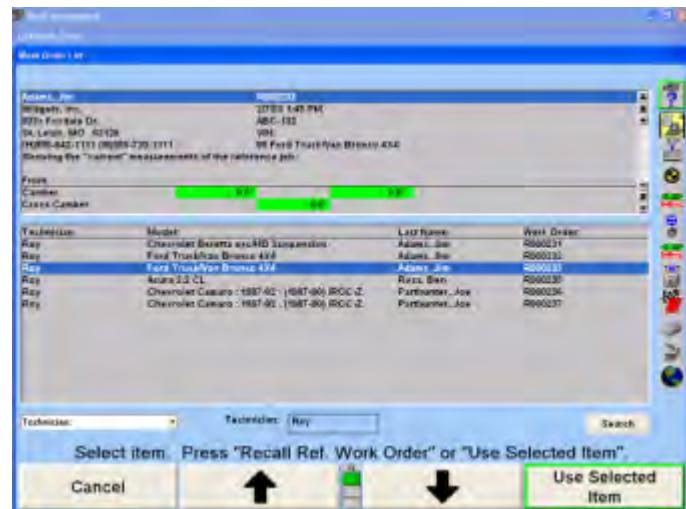
List Work Orders may also be selected prior to entering any customer information to access the entire Work Management database. The “List Work Orders” screen will let you view, print, sort and search work orders in the database.



The drop-down menu on the lower left portion of the screen allows you to sort the work orders by many of the entries found on the edit screen such as:

work order	last name
company	zip code
home telephone number	vehicle identification number
license	make / model
technician	mileage
tire tread depth	date search

In addition to sorting the list, you can also perform searches on the list. For instance, if “Last Name” is selected, a box will appear for the customer name to be entered. Enter the customer’s last name and press “Search” and only the work orders with that name will appear. Highlight the appropriate work order and select “Use Selected Item”.



The upper portion of the display will list the customer information and vehicle alignment measurements for that

work order. Press the "Print Summary" key on the second row of softkeys in order to create a printout of the results. Press "Use Selected Item" to create a new work order with the same customer information.

6.3.7. Adding a New Vehicle to a Customer ID

While viewing the "Edit Work Order" screen, you may need to specify an additional vehicle for a customer than what was previously aligned. To do this, begin by recalling the previous work order by pressing the "Use Selected Item" on the "List Order List" screen. This will fill in the "Edit Work Order" screen with customer information and the previous vehicle.

Select the "Recall Specs" button, , to access the "Recall Specifications" pop-up screen.

Select the appropriate vehicle.

Edit the vehicle information for color and mileage, and press "OK" to continue with the alignment.

Press "End Management" to return to the "Work Management" primary screen.

6.3.8. Saving the Current Work Order in Custom Forms

In the typical case, you will have created a work order using the "Work Management" setup option and the Work Order will be saved automatically during the alignment process. If you have created a Work Order without using the setup option described in the instructions for Entering Customer Information, you will have to manually save the work order as follows:

Press "Work Management" on any primary screen. The "Work Management" primary screen will appear.

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



NOTICE

If the current work order customer/vehicle identification was not recalled from the database, a new customer/vehicle identification is created and attached to the current work order.

If the current work order customer/vehicle identification was recalled from the database, any customer/vehicle identification changes (for example a new address or phone number) would replace the original customer/vehicle identification. Any work orders attached to the original customer/vehicle identification will show the updated information.

Switching Between Reference and Current Work Orders in Custom Forms.

All primary screens that can utilize the reference work order have a softkey that toggles between "Show Ref. Work Order" and "Show Current Work Order".

When the current work order is active, pressing "Show Ref. Work Order" will make the reference work order active. This toggling softkey allows switching between the current and reference work order.



NOTICE

When the reference work order is active, the background screen color changes. A number of softkeys will be disabled (grayed out) since the reference work order can not be modified. Prompts and reminders will indicate the reference work order is active and can not be modified.

6.3.9. Exporting a Work Order in Custom Forms .

Work Orders can be exported in CSV (comma delimited data) format for reading in a spreadsheet program such as Excel or in TXT (ASCII text) format for reading in any text editing program.

Select "Work Management" to access the "Export Work Order" softkey. When selected, it will bring up the entire work management database. Select the "Select All List Items" to select the entire database, or do a search on specific parameters to export only specific work orders, such as work orders performed by a specific technician, or type an individual work order number into the search field to export only one work order.

When the items to be exported are selected, press "Export Work Orders". This will bring up a dialog box. Select the location to store the file, and the file format.

The file will contain all the information on the work order, but will not contain any specific adjustments or readings.

6.3.10. Deleting a Work Order in Custom Forms

Select Work Management to access the "Delete Work Order" softkey. When selected, it will bring up the entire work management database. Select the "Select All List Items" to select the entire database, or do a search on specific parameters to delete only specific work orders, such as work orders performed by a specific technician, or type an individual work order number into the search field to delete only one work order.

When the items to be deleted are selected, press the "Delete Work Order" key. This will delete all of the stored measurement data. If you stop at this point, the customer information such as vehicle type, customer name and address will still remain in the database so it can be recalled. If you also want to delete this other information, press "Delete Vehicle" to delete the vehicles owned by each customer and then press "Delete Customer" to delete the remaining data in the database such as customer name and address.

6.3.11. Managing the Database

The "Manage Database" softkey is available in for any work order format allowing data to be added, changed, or deleted from the database without affecting the current work order. The data can also be displayed in charts, filtered, and used to generate mailing labels and form letters.

6.3.12. Format 1

Format 1 is the alternate format for most U.S. shops. This is a fixed format which is not customizable.



NOTICE

Format 1 uses a different user interface than Custom Forms, as described below.

6.3.13. Entering Customer Information

Customer information can be entered on the "Edit Customer Information" pop-up screen, the "Add New Customer" pop-up screen, or the "Edit Work Order" pop-up screen.

The "Edit Customer Information" pop-up screen will appear at the beginning of the alignment procedure, only if "Edit Customer Information" is selected in "Aligner Setup" under "Common Alignment Preferences".

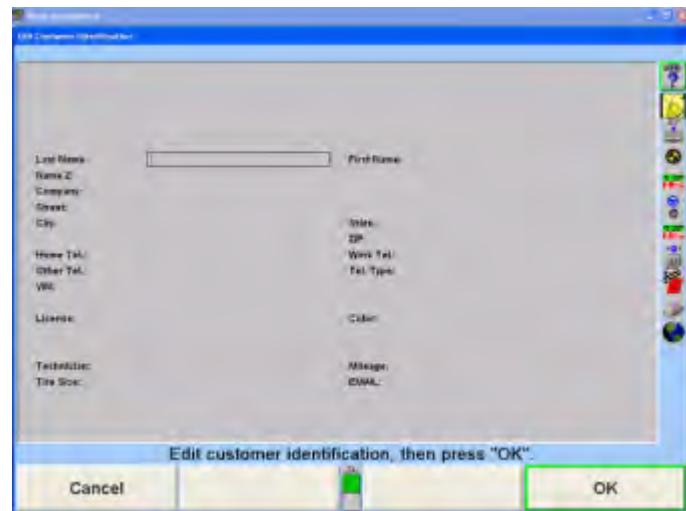
The "Edit Work Order" pop-up screen will appear at the beginning of the alignment procedure, only if "Work Management" is selected in "Aligner Setup" under "Common Alignment Preferences".

"Edit Customer Information" and "Work Management" cannot be selected at the same time from "Common Alignment Preferences".

"Work Management" may be accessed within WinAlign® without being selected in "Aligner Setup" under "Common Alignment Preferences". "Add New Customer" is accessed through "Work Management".

6.3.14. Edit Customer Information

When "Edit Customer Information" is enabled in "Aligner Setup" under Common Alignment Preferences, the customer information can be entered at the beginning of the alignment from the "Edit Customer Information" pop-up screen.



The cursor indicates the position where characters will appear. The darker shaded areas identify fields that the Work Order may be recalled by. These fields are: customer name, company, license number, technician, and mileage. Date of service also is a recall criteria and is automatically entered.

Enter the required information using the keyboard. Press **ENTER** or **TAB** to advance to the next field. Press **SHIFT** and **TAB** to back up to the previous field.

If an error is made while entering the information, press the **BACKSPACE** key to delete the last character entered.

Corrections can be made by moving the cursor to the incorrect character and re-entering. Press the right or left cursor arrow key to move the cursor to the incorrect character. Press "Delete" to remove the incorrect character, then press the correct character key. 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.

To remove a character, move the cursor to the left of the character and press "Delete." The character will be removed and all other characters on the line will move to the left.

Press "OK" after entering the information. The "Recall Specifications" pop-up screen will appear.

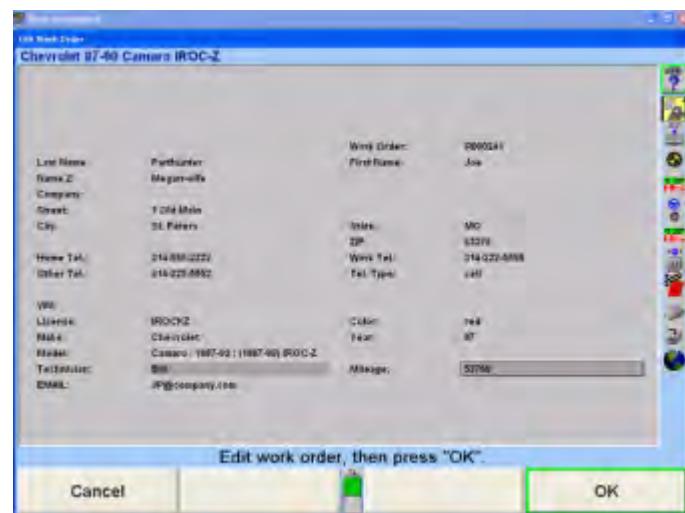
6.3.15. Edit a Work Order

When "Edit Customer Information" is enabled in "Aligner Setup" under Common Alignment Preferences, the customer information can be entered at the beginning of the alignment procedure after entering the vehicle specifications by selecting "Add New Customer" from the "Work Management" primary screen.

OR

Customer information can be entered at anytime during the alignment by selecting "Work Management" and selecting "Add New Customer".

To enter or edit the information, press "Edit Work Order" from the "Work Management" primary screen. The "Edit Work Order" pop-up screen will appear.



The cursor indicates the position where a character will appear.

Enter the required information by using the keyboard.

Press **ENTER** or **TAB** to advance to the next field. Press **SHIFT** and **TAB** to back up to the previous field.

If an error is made while entering the information, press the **BACKSPACE** key to delete the last character entered.

Corrections can be made by moving the cursor to the incorrect character and reentering. Press the right or left cursor arrow key to move the cursor to the incorrect

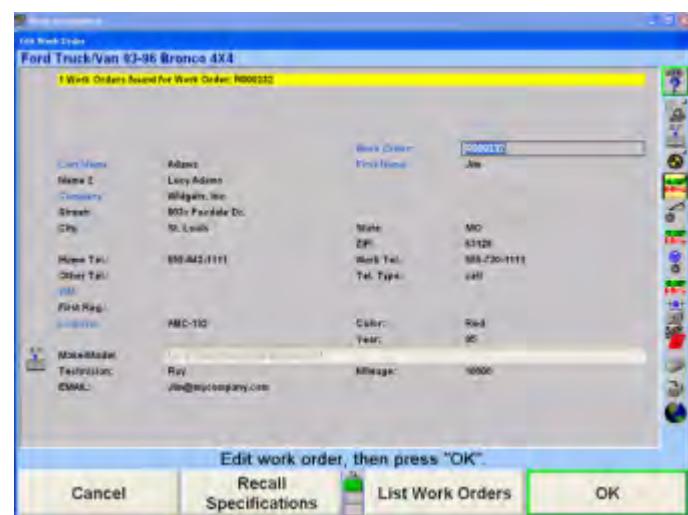
character. Press Delete to remove the incorrect character, then press the correct character key.

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.

To remove a character, move the cursor to the left of the character and press Delete. The character will be removed and all other characters on the line will move to the left.

Press "OK" after entering the information. The display will return to the screen where "Work Management" was accessed, or to the next display in the alignment procedure.

If the customer data being entered matches the data in the current database, the work order will automatically identify the number of matching work order(s) at the top of the screen. Entering additional information in the work order may narrow the selection of matching work orders. To view the matching work orders, select "View Work Order".



This function must be enabled in aligner setup.

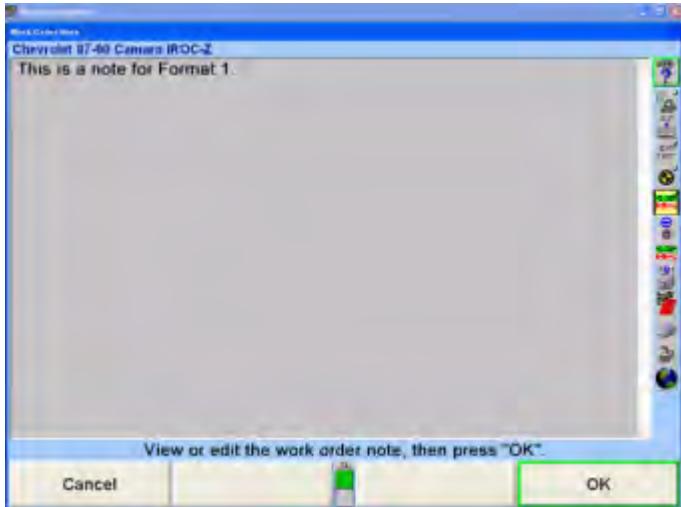
Select "Service Programs" from the "Logo" screen, then select "Set Up".

Scroll through the set up menu and select "Work Order Format". From "Work Order Format", select "Custom Forms". Select "OK".

Scroll through the set up menu and select "Common Alignment Preferences". Enable "Work Management", and select "OK". Select "End Set Up".

6.3.16. Adding a Note

If additional information needs to be added to the work order, select "Show Note". When "Show Note" is selected, the "Work Order Note" screen will appear.

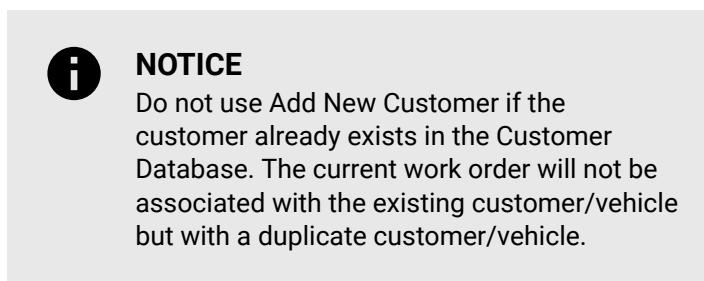


Anything can be typed in this area. Select "OK", when finished and the display will return to the work order screen. The note will be hidden, shown only as a yellow box stating, A note is attached. Select "Show Note" again to display, or edit the information.

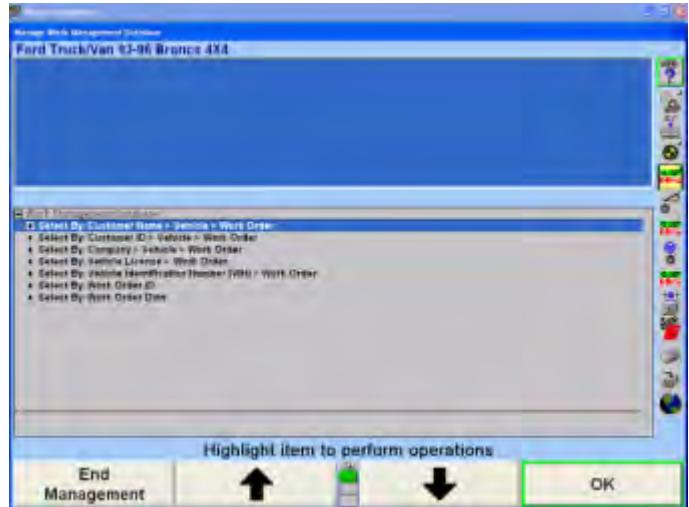
The note will be printed on the bottom of the "Print Summary".

6.3.17. Recalling a Customer/Vehicle

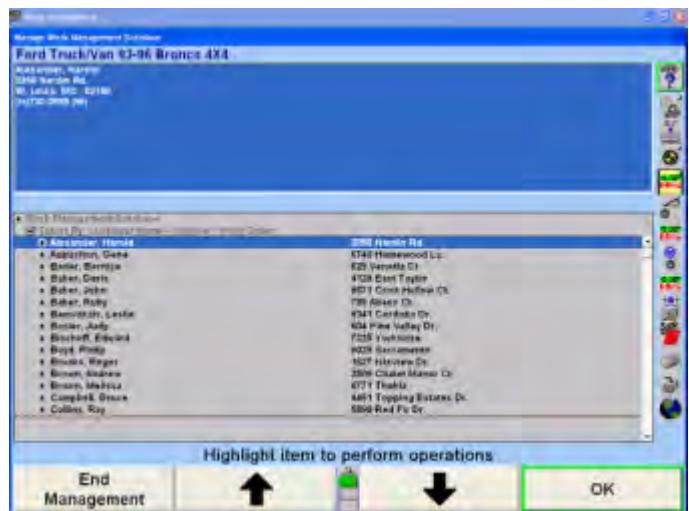
Use Recall Customer to recall an existing customer/vehicle into the current work order.



Press "Recall Customer" in the "Work Management" primary screen. The "Recall Customer/Vehicle" pop-up screen will appear, as shown below.

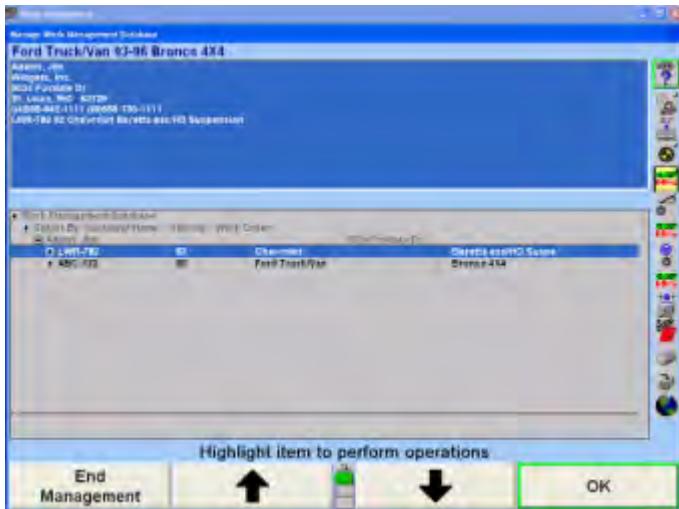


Press ↑ or ↓ to highlight the desired method of recalling the information, then press "OK". The screen will change to display a list of customers sorted by name or company, vehicle license numbers, vehicle identification number, work order identifications, or work order dates, as shown below.

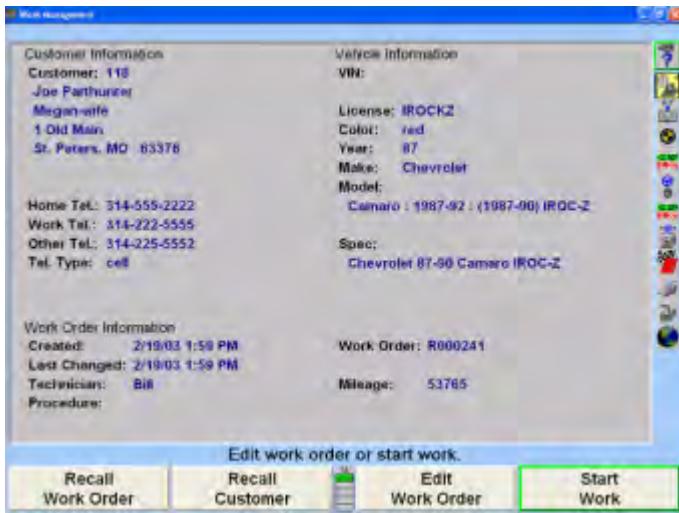


Press **or** to highlight the desired customer/vehicle, then press "OK".

The following screen will display. If the customer has more than one vehicle, select the appropriate vehicle and press "OK".



Once the customer/vehicle is identified, the customer/vehicle identification is recalled and attached to the current work order. The "Work Management" primary screen will appear, as shown below.



Select "Edit Work Order" to make any necessary changes or updates. Press "Start Work" to proceed with the alignment procedure.

6.3.18. Saving the Current Work Order

Press "Work Management" on any primary screen. The "Work Management" primary screen will appear.

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

When Work Management is enabled in Aligner Setup, and ExpressAlign® is enabled, the "Save Current Work Order" key will appear as part of the alignment procedure.

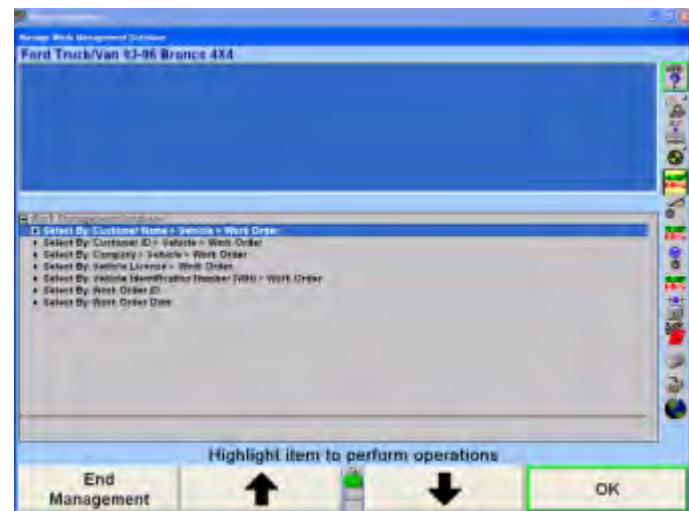


NOTICE

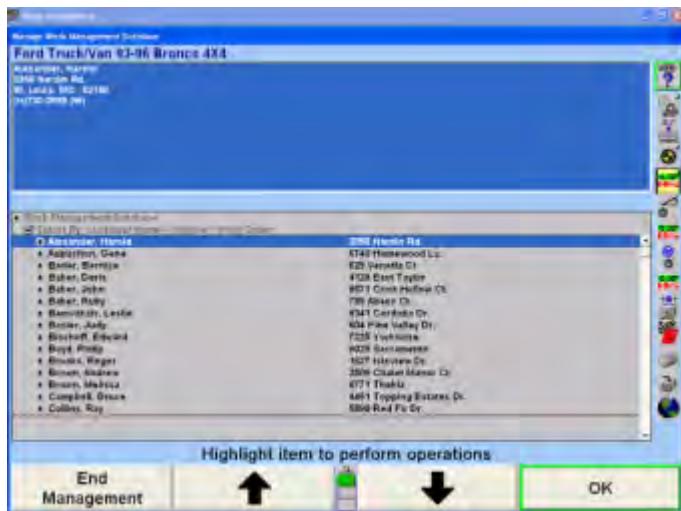
If the current work order customer/vehicle identification was not recalled from the database, a new customer/vehicle identification is created and attached to the current work order. If the current work order customer/vehicle identification was recalled from the database, any customer/vehicle identification changes (for example a new address or phone number) would replace the original customer/vehicle identification. Any work orders attached to the original customer/vehicle identification will show the updated information.

6.3.19. Recalling a Work Order

Press "Recall Work Order" in the "Work Management" primary screen. The "Recall Work Order" pop-up screen will appear, as shown below.



Press ↑ or ↓ to highlight the desired method of recalling the information, then press "OK". The screen will change to display a list of customers sorted by name or company, vehicle license numbers, vehicle identification number, work order identifications, or work order dates, as shown below.



Continue making selections until the desired worker order is chosen. The selected work order will become the active work order.

6.3.20. Switching Between Reference and Current Work Orders

All primary screens that can utilize the reference work order have a softkey that toggles between "Show Ref. Work Order" and "Show Current Work Order".

When the current work order is active, pressing "Show Ref. Work Order" will make the reference work order active. This toggling softkey allows switching between the current and reference work order.

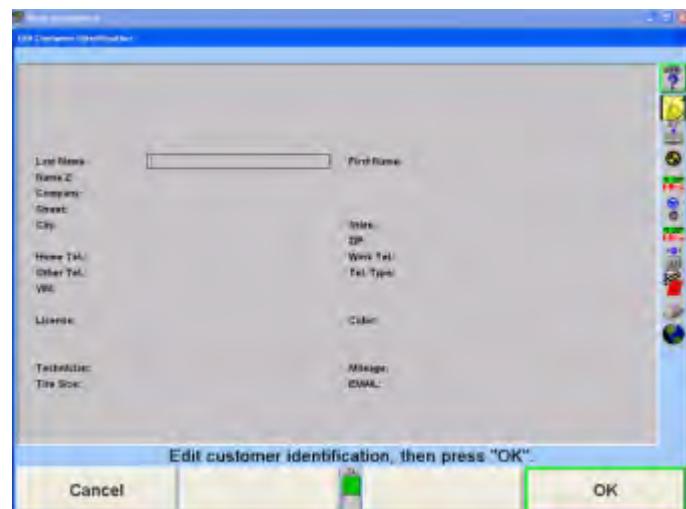


NOTICE

When the reference work order is active, the background screen color changes. A number of softkeys will be disabled (grayed out) since the reference work order can not be modified. Prompts and reminders will indicate the reference work order is active and cannot be modified.



Select the customers make and model of vehicle. Refer to Vehicle Specifications. When the vehicle has been identified to the aligner, the "Edit Work Order" pop-up screen will appear with the vehicle information added, as shown below.



Enter the desired information and press "OK". The customer will be added to the database and the "Work Management" primary screen will appear.

OR

Press "Manage Database" on the "Work Management" primary screen.

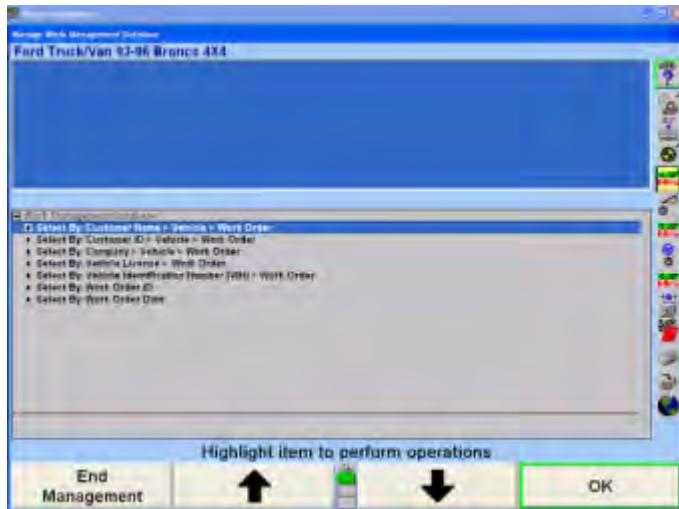
The "Manage Work Management Database" pop-up screen will appear, as shown below.

6.3.21. Managing the Customer Database

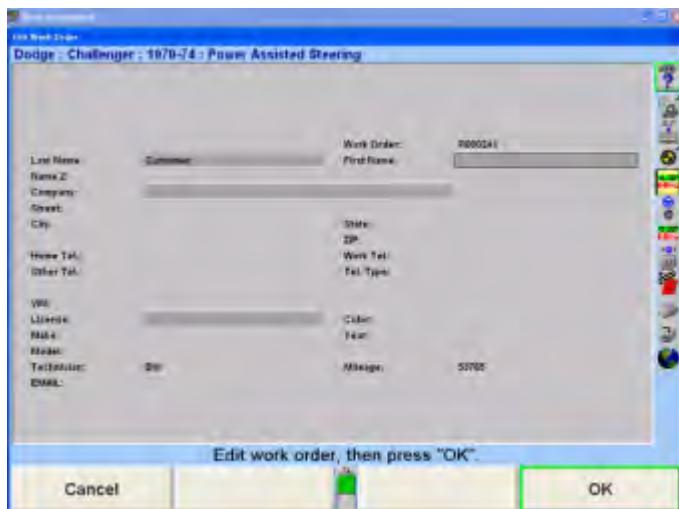
The "Manage Database" softkey allows data to be added, changed, or deleted from the database without affecting the current work order. The data can also be displayed in charts, filtered, and used to generate mailing labels and form letters.

6.3.22. Adding a New Customer

Press "Add New Customer" on the "Work Management" primary screen. The "Recall Specifications" pop-up screen will appear, as shown below.

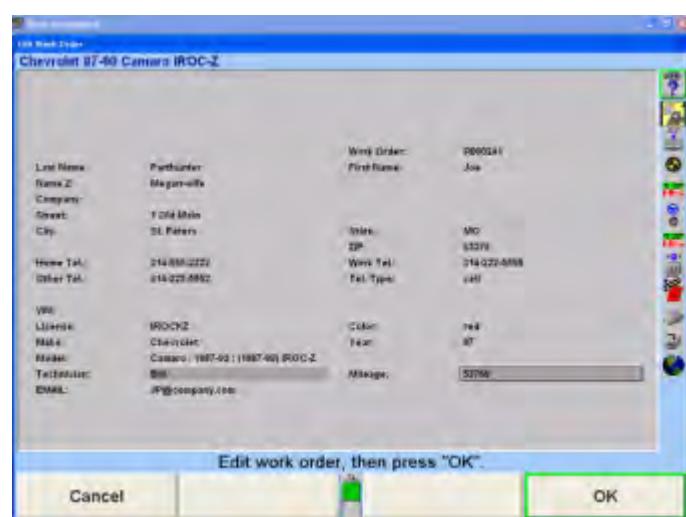
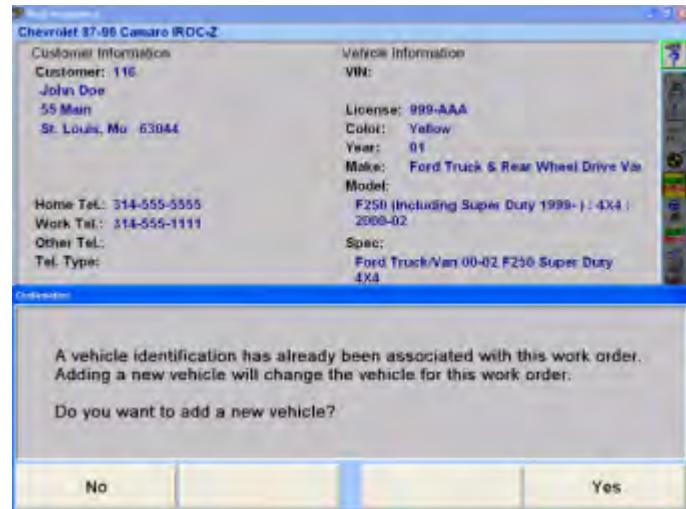


Press "Add New Customer". The "Edit Customer Identification" pop-up screen will appear, as shown below.



Enter the desired information, and then press "OK". The "Recall Vehicle Specifications" pop-up screen will appear.

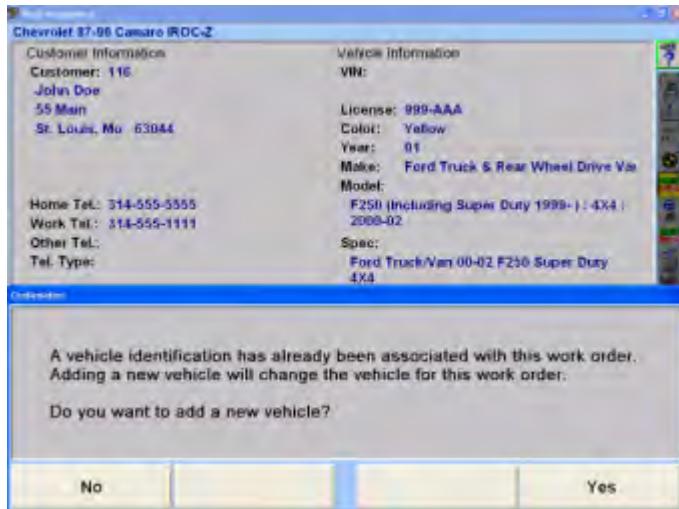
Identify the vehicle the customer owns. Refer to Vehicle Specifications. When the vehicle has been identified to the aligner, the "Edit Customer Identification" pop-up screen will appear with the vehicle information added, as shown below.



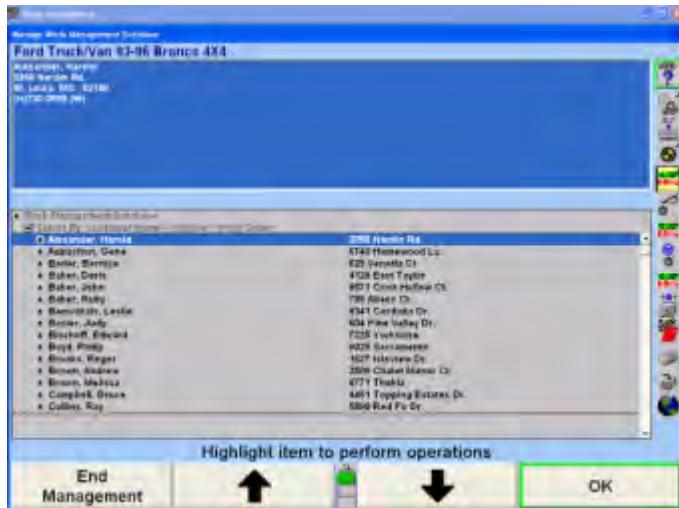
Enter any additional information, and then press "OK". The "Manage Customer Database" pop-up screen will appear. Press "End Management" to return to the "Work Management" primary screen.

6.3.23. Adding a New Vehicle to a Customer

Press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear, as shown below.



Press ↑ or ↓ to highlight the desired method of listing customers by name, ID, or company, then press "OK". The screen will display a list of customers, as shown below.



Press ↑ or ↓ to highlight the desired customer, then press "OK". The screen will change to display a list of vehicles.

Press "Add New Vehicle". The "Recall Specifications" pop-up screen will appear.

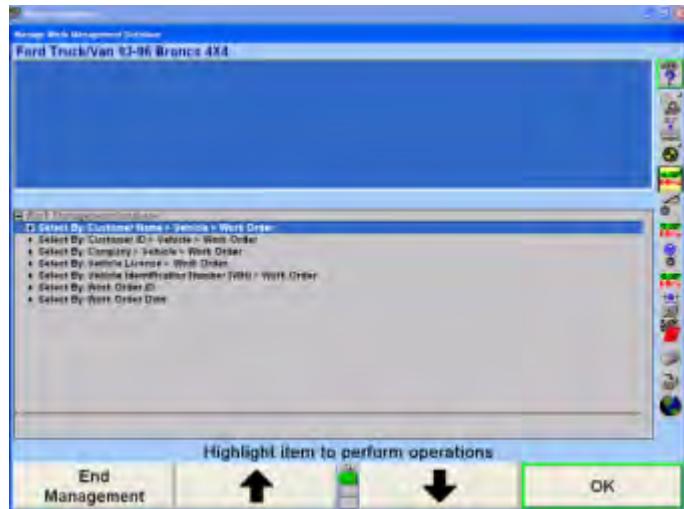
Identify the vehicle the customer owns. Refer to Vehicle Specifications. When the vehicle has been identified to the aligner, the "Edit Work Order" pop-up screen will appear with the vehicle information added.

Edit the vehicle information and press "OK". The "Manage Work Management Database" pop-up screen will appear.

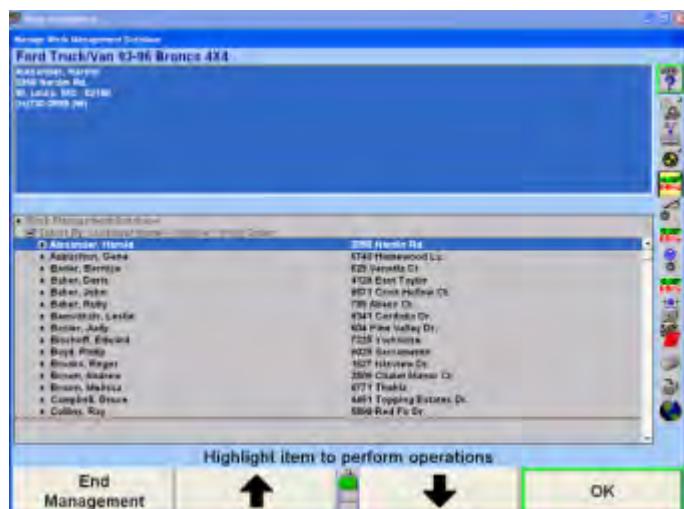
Press "End Management" to return to the "Work Management" primary screen.

6.3.24. Changing the Customer

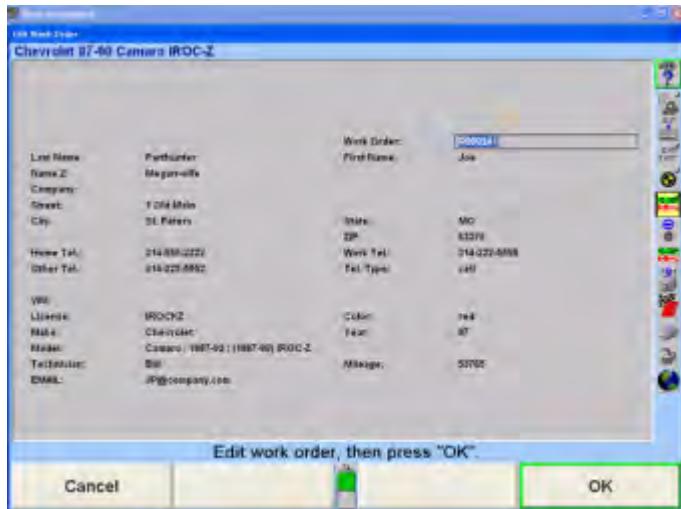
Press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear, as shown below.



Press ↑ or ↓ to highlight the desired method of recalling the information, then press "OK". The screen will change to display a list of customers sorted by name or company, vehicle license numbers, vehicle identification number, work order identifications, or work order dates, as shown below.



In a customer list, press ↑ or ↓ to highlight the desired customer, then press "OK". A list of vehicles will be displayed. Press "Edit Customer ID". The "Edit Customer Identification" pop-up screen will be displayed which allows the associated customer identification to be changed.



Press "OK" to save the entered changes. Press "End Management" to ignore any changes and return to the "Manage Customer Database" pop-up screen.

6.3.25. Deleting a Customer

Press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear.

Press ↑ or ↓ to highlight the desired method of recalling the information, then press "OK". The screen will change to display a list of customers.

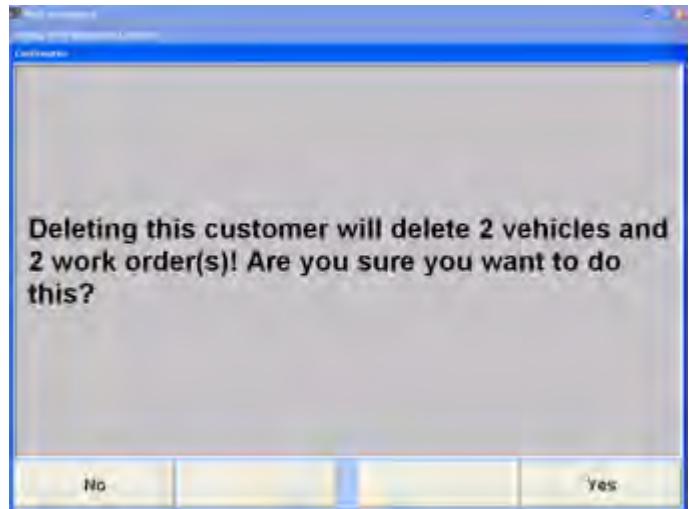
Press ↑ or ↓ to highlight the desired customer, then press "Delete Customer".



NOTICE

A customer must be highlighted for the softkey "Delete Customer" to appear.

A confirmation screen will appear with the statement "Deleting this customer will delete (X) vehicles and (X) work orders! Are you sure you want to do this?" as shown below.

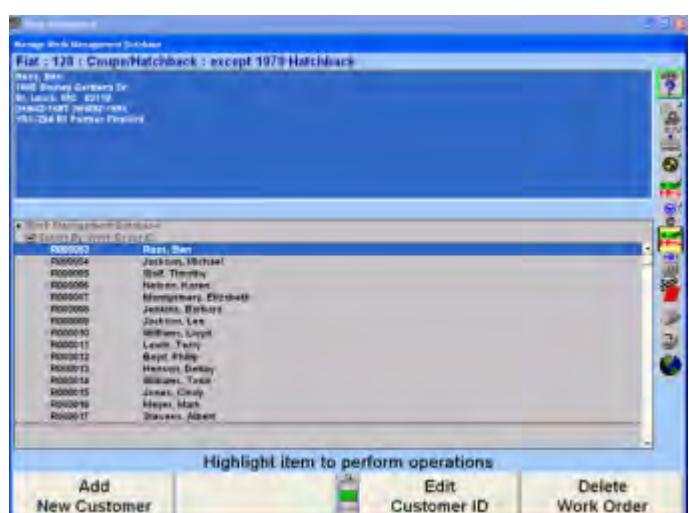


Press "Yes" to delete the information or "No" to keep the information. Press "End Management" to return to the "Work Management" primary screen.

6.3.26. Deleting a Vehicle

Press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear.

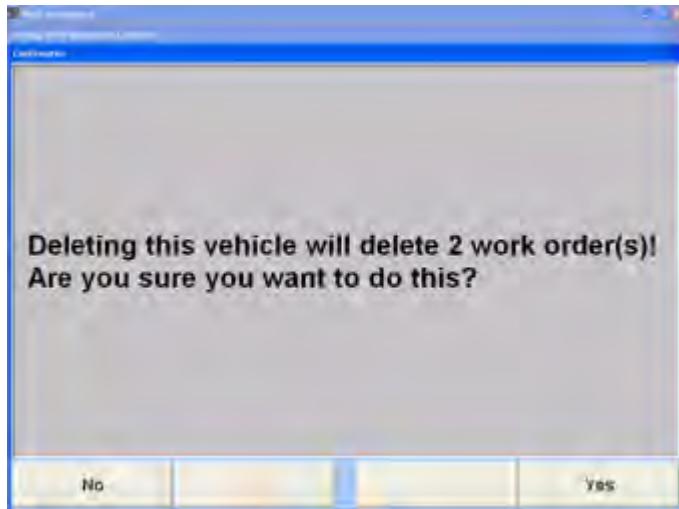
Press ↑ or ↓ to highlight the desired method of recalling the information, then press "OK". Continue until the desired vehicle is highlighted, then press "Delete Vehicle".



NOTICE

A vehicle must be highlighted for the softkey "Delete Vehicle" to appear.

A confirmation screen will appear with the statement, "Deleting this vehicle will delete (X) work orders! Are you sure you want to do this?" as seen below.



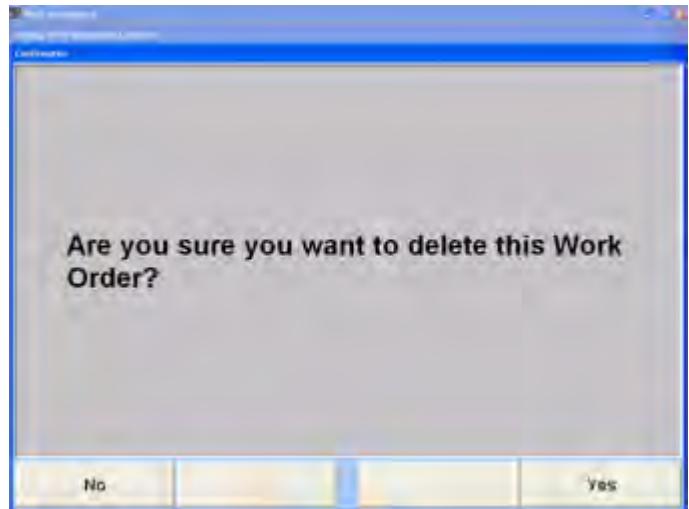
Press "Yes" to delete the information or "No" to keep the information. Press "End Management" to return to the "Work Management" primary screen.

6.3.27. Deleting a Work Order

Press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear.

Press ↑ or ↓ to highlight the desired method of recalling the information, then press "OK".

Continue until the desired work order is highlighted, then press "Delete Work Order".

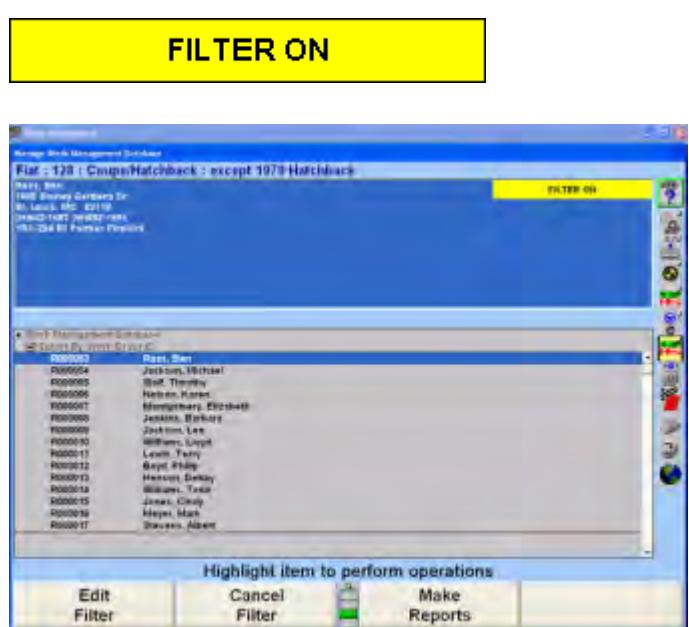


Press "Yes" to delete the Work Order or "No" to keep the Work Order.

Press "End Management" to return to the "Work Management" primary screen.

6.3.28. Filtering Data

Filtering is a method of instructing the database to display only certain customer, vehicles, and work orders. A filter will reduce the amount of data in the database you view. For example, to view only those customers whose last names begin with the letter "B", create a filter to select customers whose last names begin with the letter "B". Once a filter is selected, all subsequent actions taken in "Manage Database" will use that filter to choose records from the database (creating reports or form letters). When a filter is being used, a yellow box will appear in the upper right hand corner, as shown below.



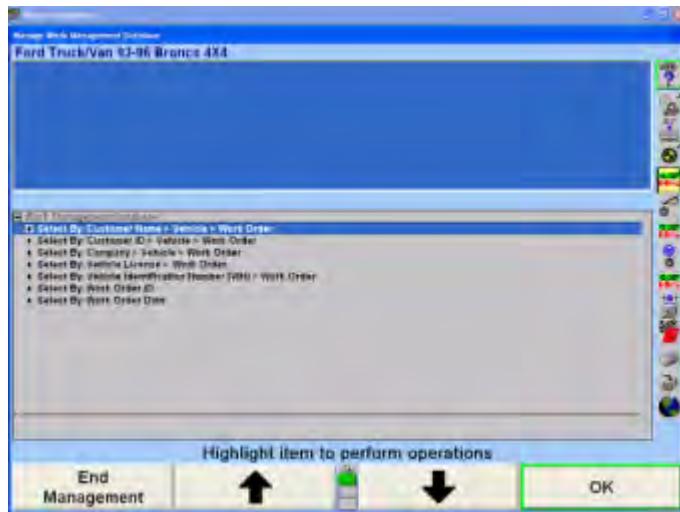
NOTICE

A work order must be highlighted for the softkey "Delete Work Order" to appear.

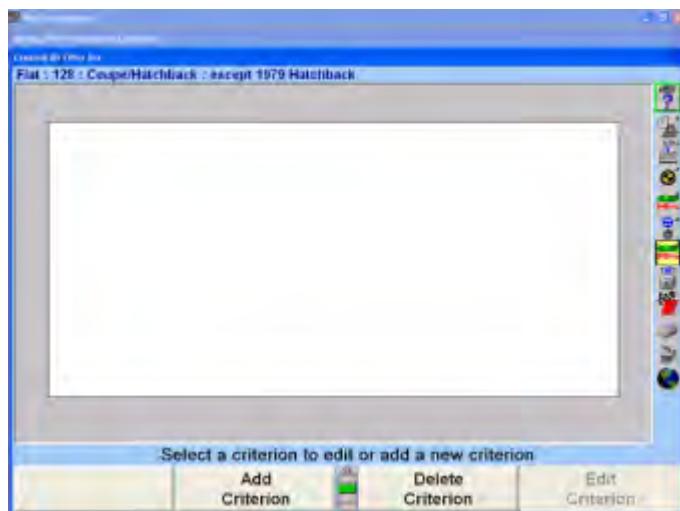
A confirmation pop-up screen will appear with the statement "Are you sure you want to delete this Work Order?" as seen below.

To deselect a filter, press "Cancel Filter" on the "Manage Work Management Database" pop-up screen. To filter data,

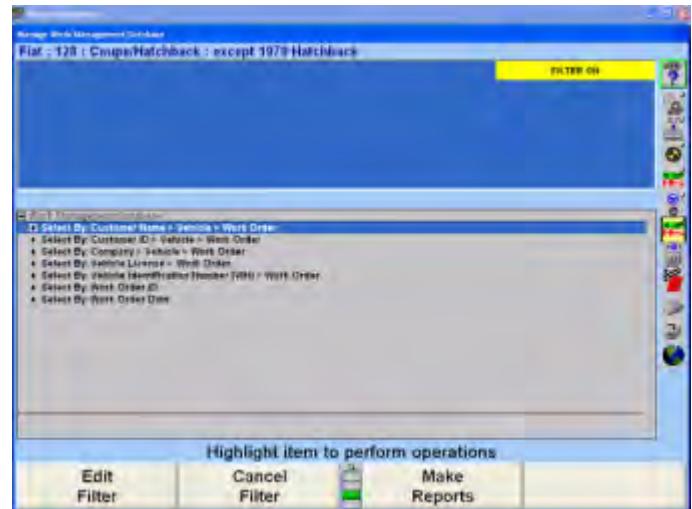
press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear.



Press "Edit Filter". The "Create/Edit Filter Set" pop-up screen will appear, as shown below.



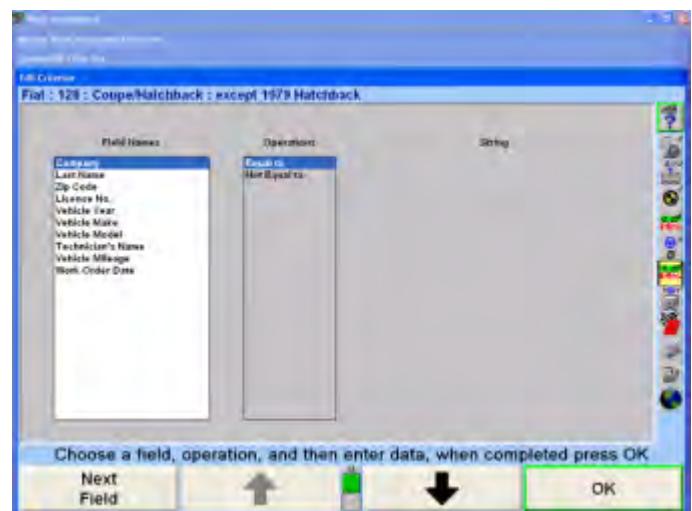
Create or recall a filter, then press "OK" on the "Create/Edit Filter Set" pop-up screen. The "Manage Work Management Database" pop-up screen, with a yellow box stating the filter is on, will appear in the upper right hand corner, as shown below.

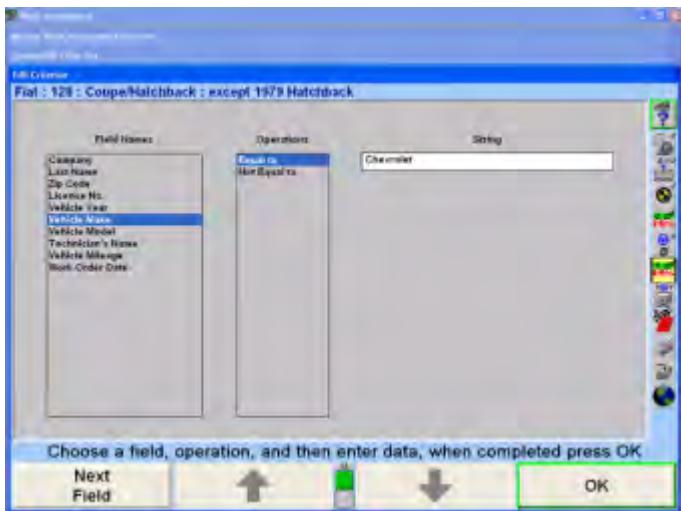


Press ↑ or ↓ to highlight the desired method of recalling the information, then press "OK". The screen will display a list of customers sorted by name or company, vehicle license numbers, work order identifications, or work order dates that meet the criteria specified in the filter.

Creating a Filter

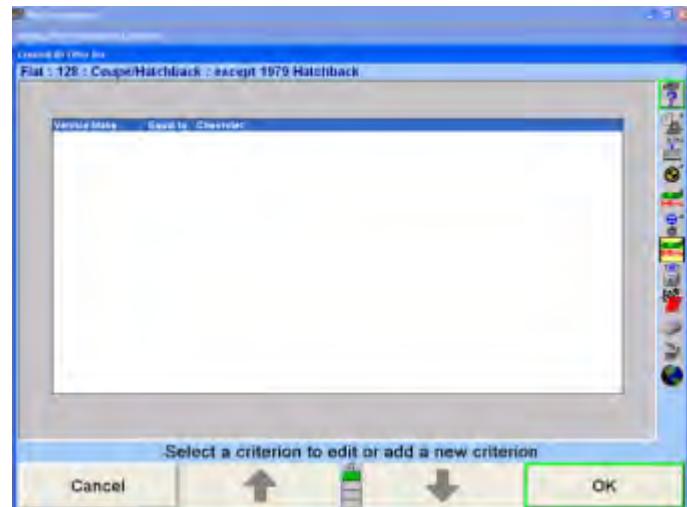
Press "Add Criterion". The "Edit Criteria" pop-up screen will appear with the cursor in the "Field Names" box, as shown below.





Press "Next Field" to move the cursor to "String" or "Date" box.

Enter the text string or date, and then press "OK". The "Create/Edit Filter Set" pop-up screen will appear with the criteria in the criteria box.



Press ↑ or ↓ to highlight the desired field name.

Press "Next Field" to move the cursor to the "Operations" box.

Press ↑ or ↓ to highlight the desired operation. Press "Next Field" to move the cursor to "String" or "Date" box.

Enter the text string or date, and then press "OK". The "Create/Edit Filter Set" pop-up screen will appear with the criteria in the criteria box.

If additional criteria is needed, repeat the above procedure.

To store a filter:

Press "Store Filter". A pop-up screen will appear.

Enter the name of the filter, then press "OK". The filter will be stored on the hard drive.

Recalling a Filter

Press "Recall Filter". A pop-up screen will appear listing the stored filters.

Press ↑ or ↓ to highlight the desired filter, then press "OK". The "Create/Edit Filter Set" pop-up screen will appear with the criteria in the criteria box.

Editing Criteria

Press ↑ or ↓ to highlight the desired criteria.

Press "Edit Criteria". The "Edit Criteria" pop-up screen will appear with the cursor in the "Field Names" box.

Press ↑ or ↓ to highlight the desired field name.

Press "Next Field" to move the cursor to the "Operation" box.

Press ↑ or ↓ to highlight the desired operation.

6.3.29. Creating Form Letters

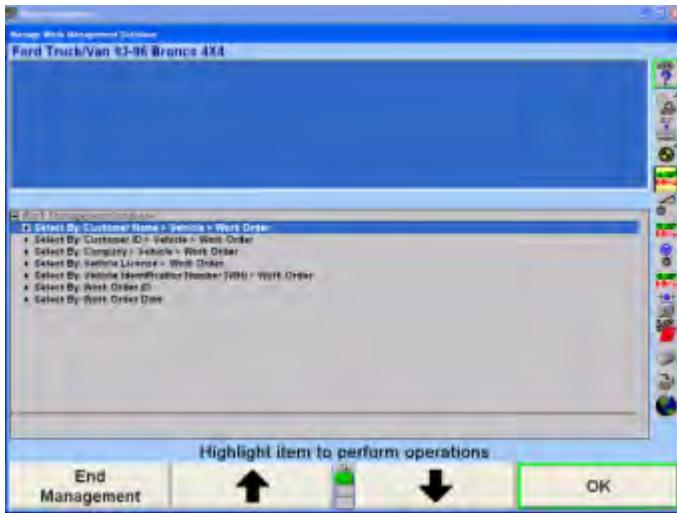
Work Management provides a word processing function so that letters can easily be created and sent to your customers.



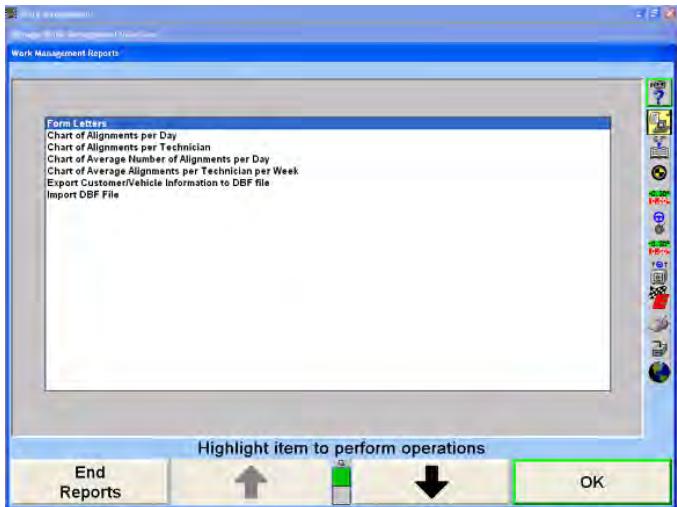
NOTICE

Running form letters on the entire database without a filter will produce a letter for every customer in the database. If the database is large, this will be very time consuming, and may not be cost-efficient.

To create a form letter, press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear, as shown below.



Press "Make Reports". The "Work Management Reports" pop-up screen will appear, as shown below.



Press "OK". The "Form Letter" pop-up screen will appear, as shown below. A new letter can be created or a letter may be recalled.



To create a new letter: Type the letter from the keyboard.



NOTICE

The text will automatically wrap in the box. Do not use the enter key to move text to the next line. Forced returns will make the layout of the printed letter incorrect. Press the "enter" key only when starting a new paragraph.

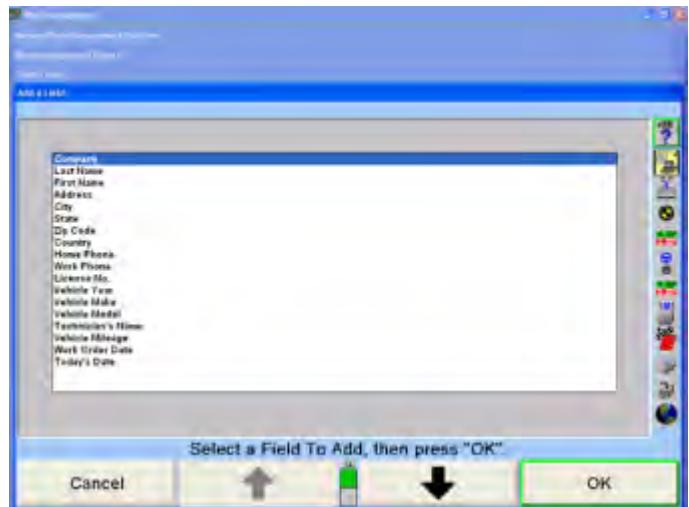
To recall a stored letter:

Press "Recall Form Letter". A pop-up screen will appear listing the stored form letters.

Press ↑ or ↓ to highlight the desired form letter, then press "OK". The Form Letter pop-up screen will appear with the letter in the box.

To add a field, move the cursor to the position where the field is to be added.

Press "Add Field". The "Add a Field" pop-up screen will appear listing field names, as shown below.



Press ↑ or ↓ to highlight the desired field, then press "OK". The "Form Letter" pop-up screen will appear with the additional field. Repeat this procedure to add more fields.

To delete a field:

Position the cursor directly in front of the field and press "Delete".

OR

Position the cursor in the field name and press "Backspace" or "Delete".

OR

Position the cursor directly behind the field and press "Backspace".

To see how the letter will appear when printed, press "Print Sample". An example of the letter will print. To save a form letter:

Press "Save Form Letter". The Form Letter pop-up screen will appear.

Press "Replace" to save as the current selected letter, or press "Save As" to save the letter with a new title.

Enter the name of the letter, then press "OK". The letter will be stored on the hard drive.

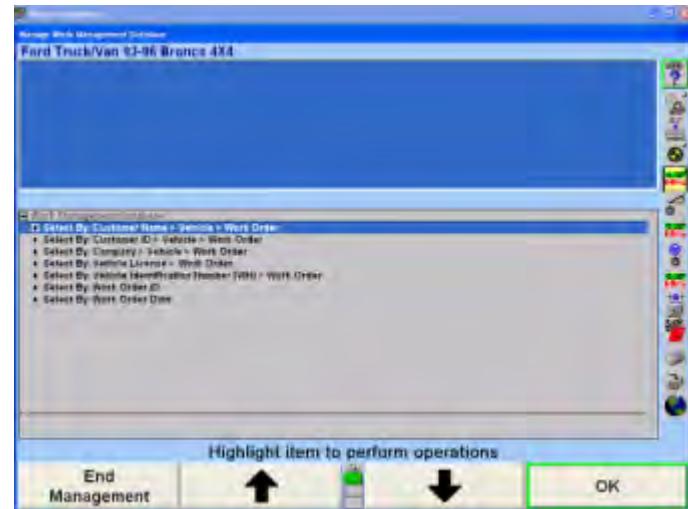
6.3.30. Printing Form Letters

Press "Print Reports". A letter for the selected customers will be printed.

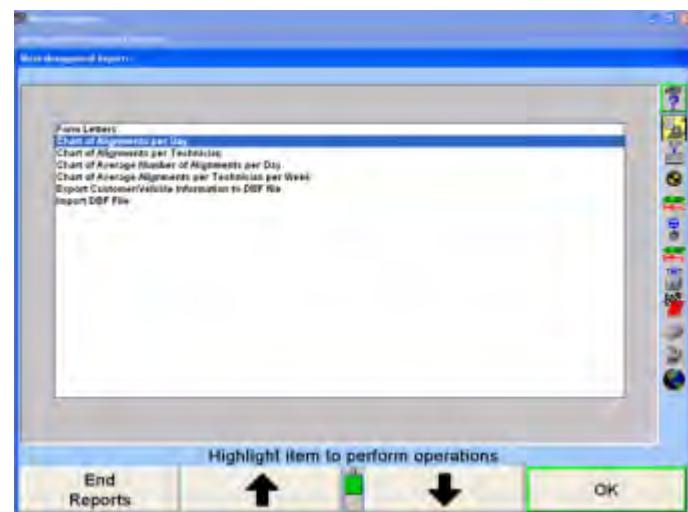


NOTICE

Running form letters on the entire database without a filter will produce a letter for every customer in the database. If the database is large, this could take a lot of time and paper.



Press "Make Reports". The "Work Management Reports" pop-up screen will appear, as shown below.



Press "Set up Printer" to open the "Print Manager" and set up the printer.

Press "OK" to return "Work Management Reports" pop-up screen.

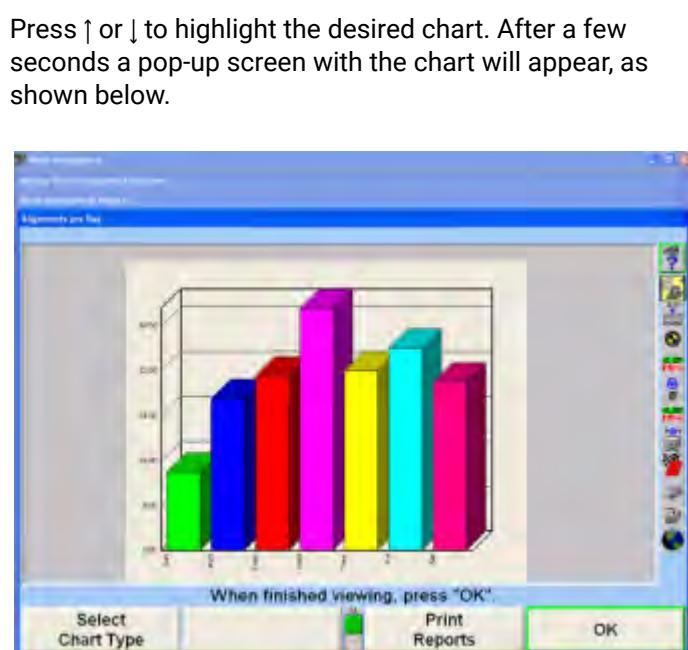
Press "End Reports" to return to the "Manage Work Management Database" pop-up screen.

Press "End Management" to return to the "Work Management" primary screen.

6.3.31. Charting Alignments

The number of alignments performed can be calculated and illustrated in a chart for a quick analysis.

Press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear, as shown below.



Press "Select Chart Type" to view additional types of charts. To print the chart, press "Print Reports".

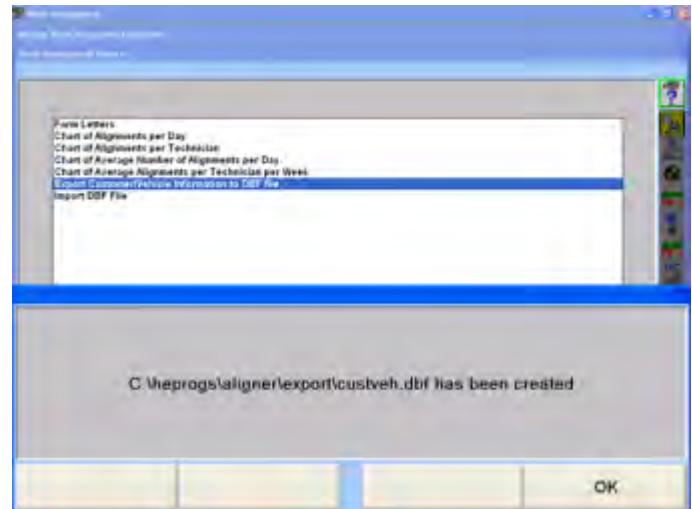
Press "OK" to return to the "Work Management Reports" pop-up screen.

Press "End Reports" to return to the "Manage Work Management Database" pop-up screen.

Press "End Management" to return to the "Work Management" primary screen.

6.3.32. Exporting Customer Database Files

Press "Manage Database" on the "Work Management" primary screen. The "Manage Work Management Database" pop-up screen will appear, as shown below.



Press ↑ or ↓ to highlight "Export Customer/Vehicle Information to DBF" file. A pop-up screen will appear stating the files are being converted. After a few seconds, a pop-up screen will appear stating the exported database is stored at C:\ALIGNER\EXPORT\CUSTVEH.DBF on the hard drive.

Press "OK" to return "Work Management Reports" pop-up screen.

Press "End Reports" to return to the "Manage Work Management Database" pop-up screen.

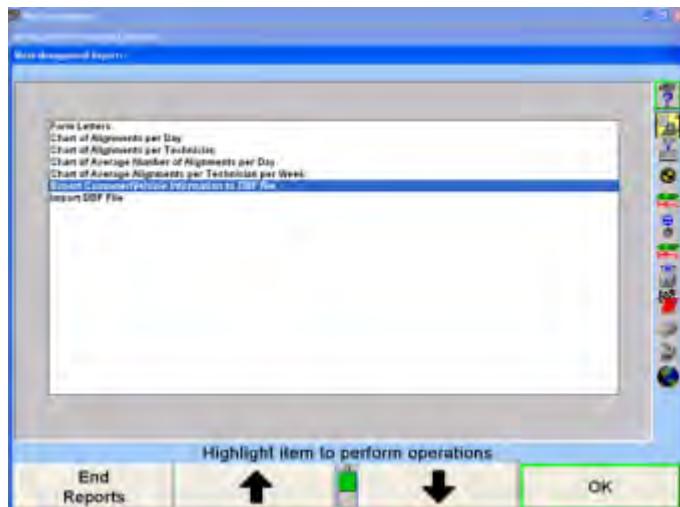
Press "End Management" to return to the "Work Management" primary screen.

6.3.33. Importing DBF Files

To import a DBF file into the "Work Management" database, the data fields MUST be in the exact order and length no longer than specified below.

Data Field Name	Character Field Character Length
COMPANY	80
LASTNAME	40
FIRSTNAME	40
STREET	80
CITY	40
STATE	40
ZIPCODE	12
HOMEPHONE	20
WORKPHONE	20
VIN	20
LICENSE	20
COLOR	20

Press "Make Reports". The "Work Management Reports" pop-up screen will appear, as shown below.



Data Field Name	Character Field Character Length
YEAR	6
MAKE	40
MODEL	80

The import database file should be placed at "C:\ProgramData\Hunter\Aligner" on the hard drive.

If the import file is not set up correctly, the data will not be imported into the "Work Management" database.

6.4. Vehicle Inspection

Vehicle Inspection requires CD-Photo Kit 20-1196-1, to view the digital photographs.

6.4.1. Point and Click Inspection Mode

Point and Click inspection integrates Hunter's standard parts inspection list with digital photos and 3-D parts drawings all on the same screen. Photos are displayed on the left side of the screen and a scrollable list of inspection parts is shown on the right. If you click on a part in the photo or a part in the list and hold down the left mouse button, a menu will pop up. From this menu, you may set the status on the part.

6.4.2. Entering Vehicle Inspection

You can access Point and Click by selecting "Vehicle Inspection".



NOTICE

The WinAlign® program defaults to the Part List Inspection Mode, not the Point and Click Inspection Mode. Point and Click or Part List Inspection Mode can be set as the default inspection mode in Aligner Setup.



The screen will display a digital photo or illustration on the left and display a scrollable inspection list on the right.

Place the pointing device in the picture area on a parts sensitive box located on any part on the corresponding list on the right. This will simultaneously display an arrow leading from the related part in the parts list.

OR

Select an item from parts list viewed on the right side of the picture. Again, Point and Click will display the related parts sensitive box on the screen and a related arrow pointing to the part selected.

6.4.3. Setting the Status in Point and Click or Inspection Parts List

Each inspection item may have one of the following three status values. These status values are equivalent in both Point and Click and Inspection Parts List modes of Vehicle Inspection Display.

Selecting one of the three inspection status values (Green, Yellow, or Red) will do all of the following:

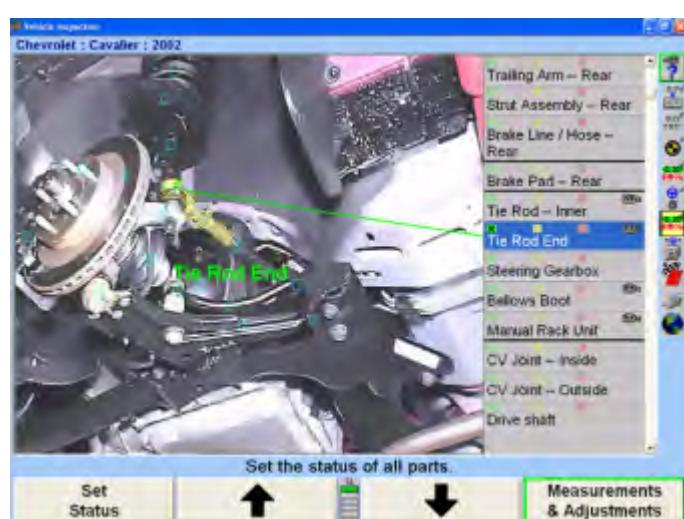
Places an "X" in the category box when selected for final analysis.

Points to the part or assembly with a color matched arrow and matching colored part description when selected.

Places a check mark on the part or assembly when selected after inspection.

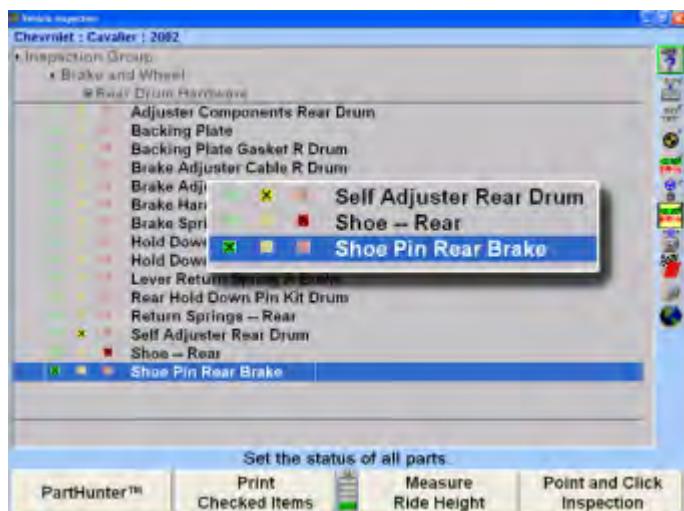
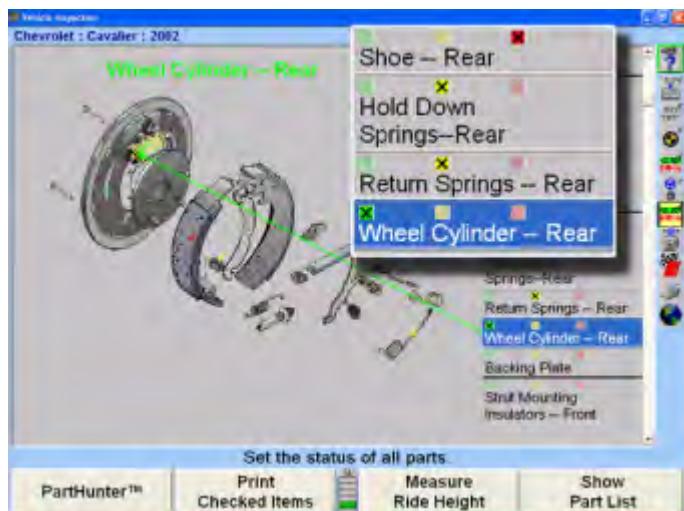
Will display a short definition of the part or assembly (in photo image or illustration display area) being marked off after inspection.

The three status values are:



☒ (Green Select Box)	Item has been Checked indicates that the technician has inspected the part/assembly for damage or wear and it is in good condition.
☒ (Yellow Select Box)	Suggest Replacement indicates that the condition of the inspected part or assembly is nearing the end of its useful life, and should be replaced.
☒ (Red Select Box)	Require Replacement indicates that the part or assembly is worn or damaged, and should be replaced.

Refer to picture insets below.



Using the ↑ or ↓ softkeys allows the technician to either move continuously through the parts list (checking every part based on the vehicle specifications) or move directly to the damaged part or assembly. Continually pressing "Set Status" up to four times in a row will ultimately clear all status references.

Parts and assemblies selected once in the inspection parts list will consistently display the same photographic image until the image can no longer support a clear view of the parts. When selecting a part that requires a different view, the photo image will change to the image or image angle for clarification. The image change is separated by a thick black line in the selection menu.

Pressing "Set Status" is another way of highlighting the part or assembly's condition. Continually pressing "Set Status" will continually move to the next condition of that part.

The inspection category check boxes also may be appropriately filled by pressing the menu shift softkey, ☐, and locating the matching softkeys for the above three categories of inspection.

Press ↑ or ↓ to scroll to the next item on the list after the status has been set.

6.4.4. Context Sensitive Menus for Point and Click or Inspection Parts List

Point and Click and Inspection Parts List both feature a context sensitive menu option.

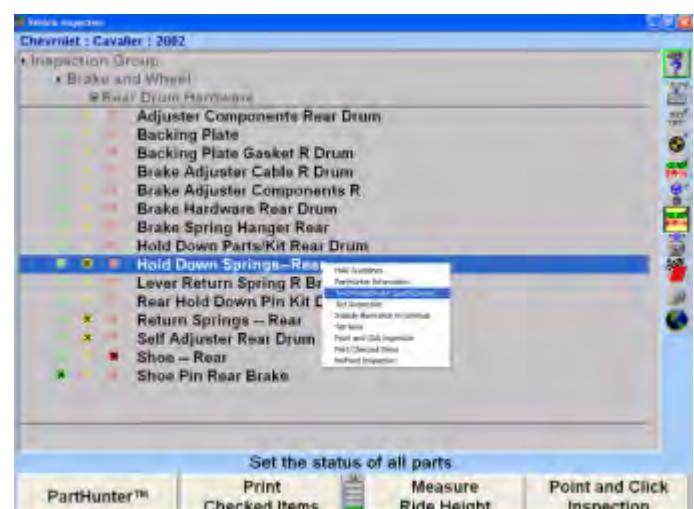
This feature can be selected from two areas of the display.

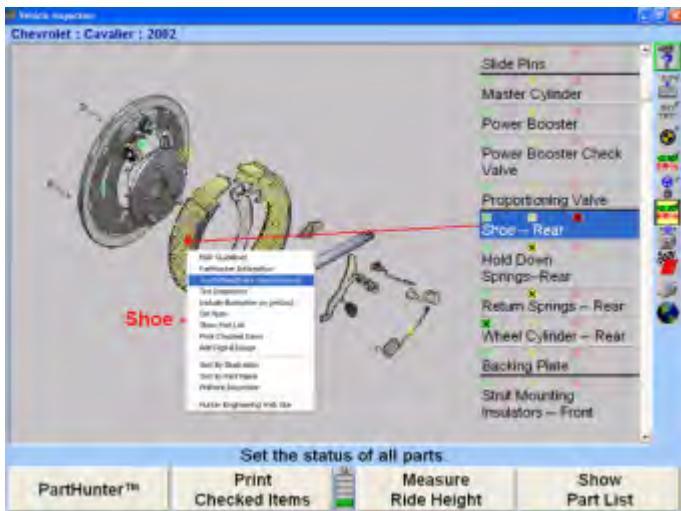
Select a part from the parts list view. Press and hold down the pointing device on a selected part for inspection.

OR

Press and hold down on the parts sensitive box ☐ (in the photo/illustration area) or anywhere on the part or assembly. The program will automatically move the inspection parts list to that particular item.

A context sensitive menu will appear providing options for the inspection or switching between Point and Click and Inspection Parts List.





The three status options (Item has been Checked, Suggest Replacement, Require Replacement) match the selections reviewed above.

6.4.5. Printing Inside Point and Click

Printing inside Point and Click is possible through the softkeys at the bottom of the screen. Two options are available, "Printing All Items" and "Print Checked" Items.

Pressing "Print All Items" will print the entire inspection category list for that specific vehicle specification, whether parts or assemblies were checked or not. Pressing "Print Checked" Items will print only the parts or assemblies checked from the inspection category list.

6.4.6. Sorting Options/Category

In the Inspection Category Listing, it is also possible to change the presentation order in the following three categories. (Shown in the previous illustration)

Sort by Illustration - the default sort method - primarily will sort the group of parts by photographic images and illustrations for the vehicle specifications selected.

Sort by Part Name - will sort the parts list into an alphabetical order against the vehicle specification selected. Each time a different part is selected from the list, the photo will change to match that selected part.

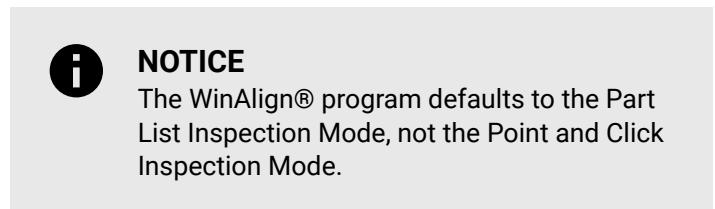
Sort by Part Type - will sort the Inspection Category List by the steering, brakes, driveline, suspension, etc. in an ascending order.

Select one of the above options by highlighting a part from the inspection category. This sorting option is located in the context sensitive menu along with the other inspection options.

6.4.7. Parts List Inspection Mode

A text only view of the inspection list is also supported. This view is very similar to the inspection list in WinAlign® version 1.5 and earlier, the parts are listed by category.

You may access "Parts List" from the second tier of softkeys (Vehicle Inspection) on any primary screen, or from the shortcut menu.



You can make Point and Click the default inspection mode in Aligner Setup.

6.4.8. Selecting the Inspection Group & Sub-Groups

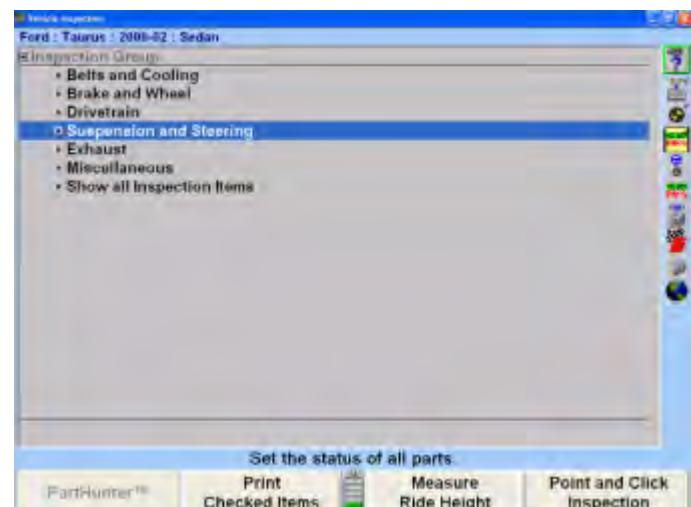
You may choose from "Brake and Wheel", "Drivetrain", or "Suspension and Steering" parts categories.

The display begins with a list of inspection groups. For example, "Brake and Wheel" is considered a Group.

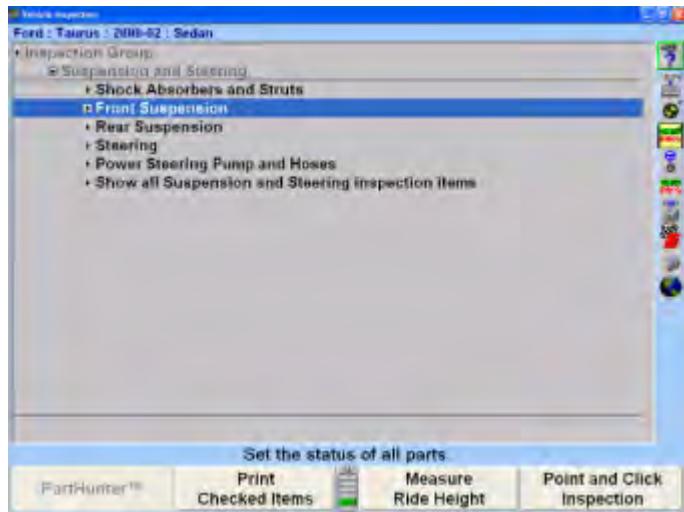
Selecting the "Brake and Wheel" Group will display an associated sub-group parts list. This list might include parts such as Front Disc Brakes, Rear Brakes, Master Cylinder and Booster, etc.

Hunter inspection lists are tailored to the vehicle selected from the specification database. The vehicles steering and suspension configurations are taken into consideration, and only the parts pertinent to the vehicle selected are displayed.

Press \uparrow or \downarrow until the desired group is highlighted or use a pointing device to move through the different groups and sub-groups.



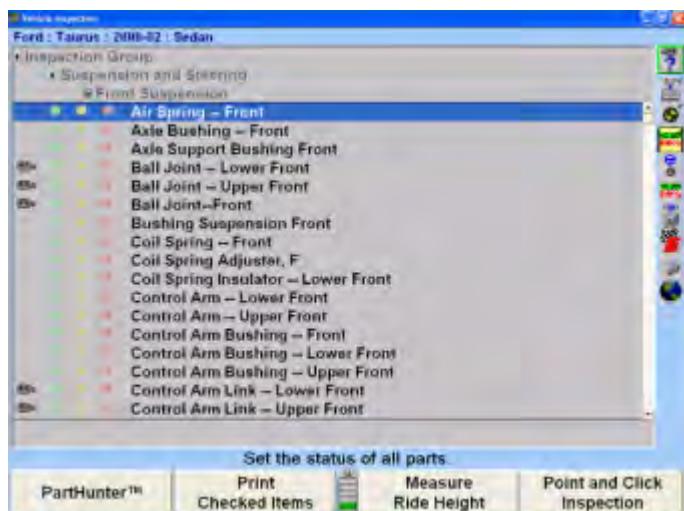
Selecting on a Sub-Group under a Group will display all related parts to be inspected. Press ↑ or ↓ until the desired part or assembly is highlighted.



Sub-Groups are the groups that are related under the Group selected such as Brake and Wheel.

Select "Front Disc Brakes" and the final Parts List will display for setting the status.

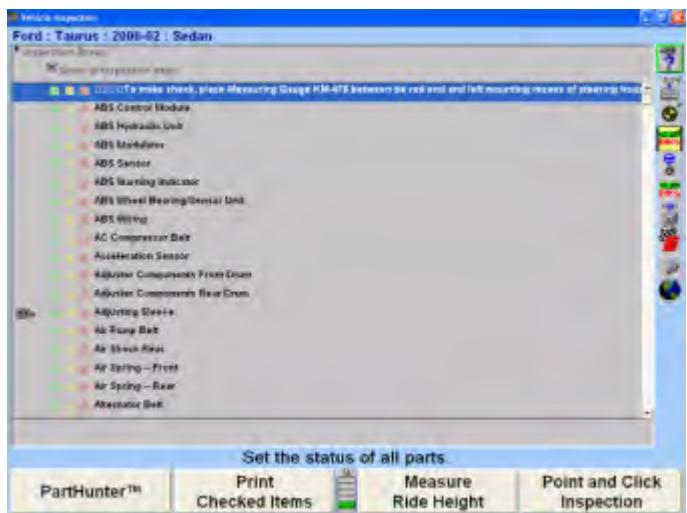
Setting the parts status is done in the final parts breakdown of the groups selected.



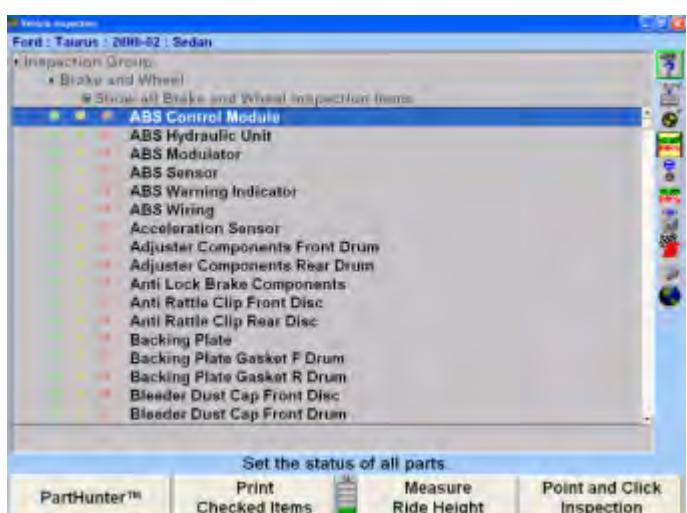
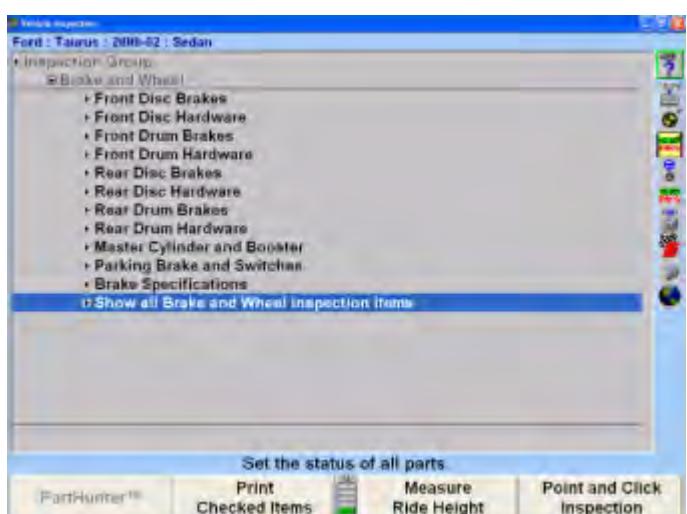
Re-selecting on group, for example, "Brake and Wheel", will return the screen to the main group selections.

6.4.9. Show All Modes

"Show All Inspection Items" option is from the primary Group list. This option allows the viewing of all parts lists from all of the groups at the same time.



While a group such as "Brake and Wheel" is selected, a "Show all Brake and Wheel inspection items" option is also available. This option allows the viewing of all parts lists directly related to the Brake and Wheel Group. Re-selecting on a group, for example, "Brake and Wheel", will return the screen to the main group categories.



6.4.10. Printing Selected Items and Illustrations

When all parts and/or illustrations have been selected and added to the printout, choose the "Print Checked Items" option on the "Vehicle Inspection" screen to print the selected parts.

6.4.11. Including Illustrations in Printouts .

Illustrations can be included on the customer printout. To include an illustration, select a part on the "Vehicle Inspection" screen by highlighting it. Click and hold on the highlighted part to activate the pop-up screen. From the pop-up screen, select "Include illustration on printout".

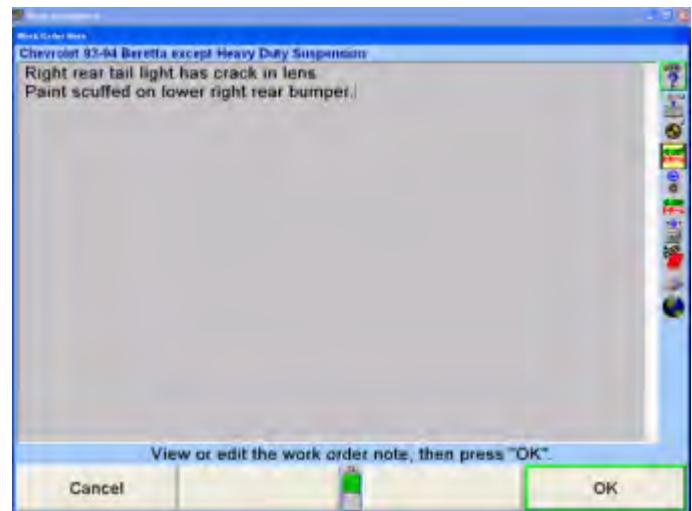


Selecting this option will print the illustration for the selected part. It will not print illustrations for all parts. The Include illustration on printout option will have to be enabled for each part that has been checked.

6.4.12. Adding Notes to Printouts

Notes can be added to printouts by selecting the "Set Note" option located on the "Vehicle Inspection" pop-up screen.

When "Set Note" is selected, the "Change Inspection Item Note" screen will appear.



Any notation entered on this screen for a particular part will appear on printouts. A note can be added to any part that is added to the printout. For example, if the note "The brakes are heavily worn." is entered on the "Add Notes" screen, it will then appear on a printout.

6.4.13. Sample Printout

Name	Joe Parthunter
Address	1 Old Main St. Peters, MO 63376
Telephone	314-555-2222
Work Phone	314-222-5555
Other Phone	314-225-5552 cell
Vehicle (VIN)	IROCKZ
License	red
Color	red
Year:	87
Technician	Roy
Mileage	69132
Time Printed	2/8/03 2:58 PM

Chevrolet : Camaro : 1987-92 : (1987-90) IROC-Z				
Item has been Checked. Suggest Replacement. Require Replacement.				
Vehicle Inspection Parts:	Estimated Cost:			
Suspension and Steering	Parts Labor			
Front Suspension				
Ball Joint - Lower Front	\$ _____			
				
Part Name: F LOWER BALL JOINT	Part Number: 1014545 F Suspension	Manufacturer: MOOG	Price: 40.28	Quantity: 2
Rear Suspension				
Stabilizer Link Rod Bushing - Rear	\$ _____			
Part Name: R SWAY BAR LINK KIT	Part Number: 10222 W/Rubber Grommets	Manufacturer: MOOG	Price: 8.13	Quantity: 2
Provides Thermoplastic Bushings For Additional Ride & Performance Benefit.				
Sub-Total:	\$ _____			
Parts & Labor:	\$ _____			
Tax:	\$ _____			
TOTAL:	\$ _____			

6.4.14. Sorting by Illustration

In the "Point and Click Vehicle Inspection" screen, parts may be sorted by illustration by selecting "Sort by Illustration" from the "Vehicle Inspection" pop-up screen.



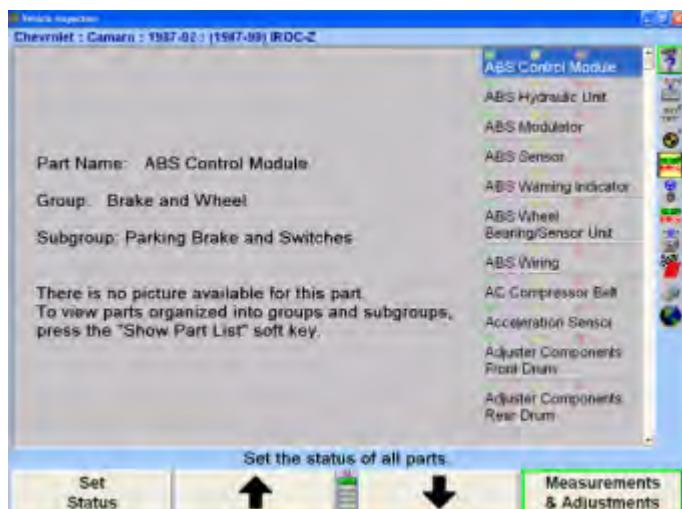
Sorting by illustration will sort the data by each illustration, and then by each part contained in an illustration. The advantage of using this sort is that all the parts for a given area are readily available.

For example, if the front steering/suspension/brake/driveline illustration is the selection, then all parts related to the illustration are listed in the scrollable area of the window.

It is more convenient to check off parts as being inspected, suggesting replacement, or requiring replacement, when they are grouped together.

6.4.15. Sorting by Part Name

In the "Point and Click Vehicle Inspection" screen, parts may be sorted by part name. To sort by part name, select "Sort by Part Name" from the Vehicle Inspection pop-up screen. This option will sort all parts in alphabetical order in a scrollable area of the screen. The advantage to this screen is that the parts are all in alphabetical order and easily searched using the scroll bar.



The disadvantage is that when working in one area of the vehicle, for example, the ABS brake system, not all of the parts for the area are grouped. If the ABS Control Module needs replacement, the parts are scrolled to ABS Control Module, the part is marked as needing replacement, the PartHunter information is collected and added to the printout. Then the wheel cylinder needs replacement. The parts list must be scrolled down to find the wheel cylinder. When multiple parts are inspected, the alphabetic list may not be as efficient as the sort by illustration may.

6.4.16. Toggling to the Parts List Screen

The "Parts List" screen is easily accessible from the "Point and Click Vehicle Inspection" pop-up screen.

6.4.17. Toggling to Point and Click Inspection

To enter the "Point and Click Vehicle Inspection" screen, select the "Point and Click Inspection" softkey.

A "Point and Click Vehicle Inspection" screen will appear.

6.4.18. Printing the Inspection Report

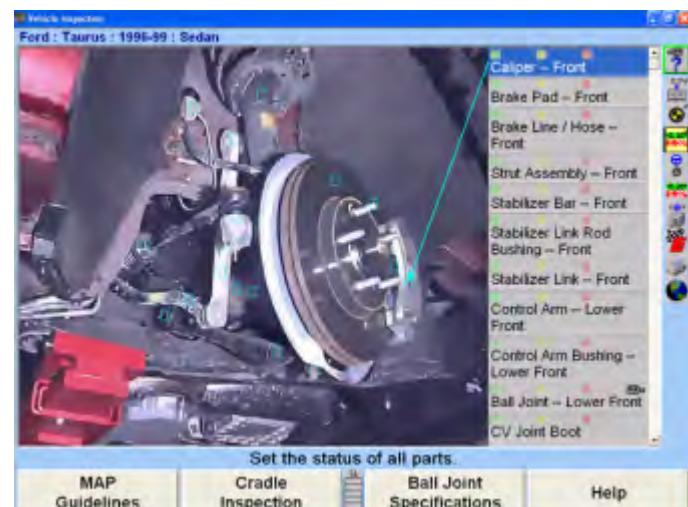
To print an inspection report: Press "Print All Items" to print a list of every item in the checklist.

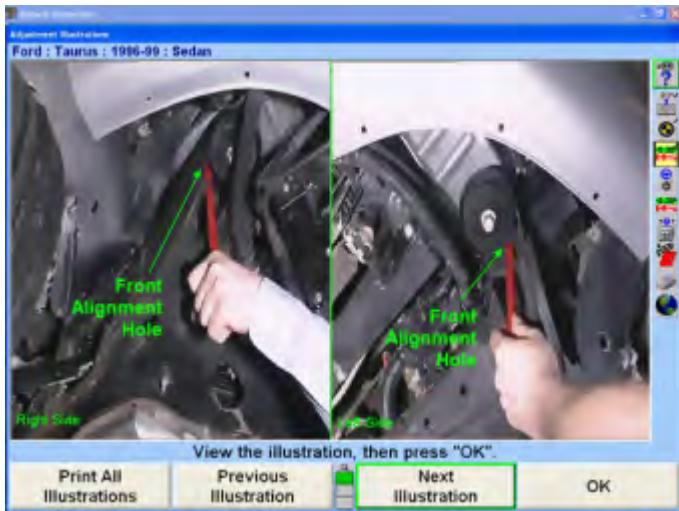
Press "Print Checked Items" to print a list of only the items checked.

6.4.19. Cradle Inspection

Cradle to body alignment should be inspected and adjusted when necessary, before continuing with the alignment procedure.

Press "Cradle Inspection" on the "Vehicle Inspection" primary screen for information about cradle positioning for those vehicles having full cradle designs. The "Cradle Illustrations" pop-up screen will appear with an inspection illustration and instructions.





Press "Next Illustration" or "Previous Illustration" to view additional illustrations.

Press "OK" after viewing illustrations. The screen will return to the "Vehicle Inspection" primary screen. For additional information on cradle adjustments, refer to [Cradle Adjustment \[278\]](#).

6.5. Tools and Kits

Tools and Kits database is an extensive database designed to give a guided overview of hand tools and aftermarket parts and kits needed to make any particular alignment adjustment. The database is presented through images and descriptions of the actual tools and kits that are based on vehicle specifications and alignment angle.

The alignment adjustment angles are Front Toe, Front Caster, Front Camber, Rear Camber and Rear Toe. All illustrations and videos in the Tools and Kits database are shown only for the specific vehicles adjustment angle and requirements. Tools and Kits has three basic features:

Hand Tools

Specialty Tools

Kits

Required Hand Tools are displayed as the conventional mechanics tools required for completing the alignment adjustment (i.e. sockets, wrenches, drive extensions). Required hand tools are displayed with cyan colored frames.

Specialty Tools are displayed as tools that are not standard mechanics tools, but are specific to the make of the vehicle or to a particular kit or part being installed (i.e. 3/8 drive Torx bit for GM vehicles hub and bearing removal, or 3/8 drive bolt/nut removing tool for removal of frozen bolts). Vehicle specific special tools are displayed with red colored

frames. Special tools needed for specific kits are displayed with green colored frames.

Kits are designed to correct alignment angles that cannot be corrected by simply adjusting the existing parts and assemblies on the vehicle. This may include kits such as original full contact camber/toe rear tab shim systems, Cam bolt kits, or universal system 2000 rear full contact cam/toe shims. Kits are displayed with yellow colored frames.

6.5.1. Accessing Tools and Kits

There are two basic methods of accessing Tools and Kits. The first method is to access the database through a drop down menu on the VirtualView® screen or on a bar graph. The second is accessing Tools and Kits through the "Illustrate Adjustments" screen.

Tools and Kits may be added to the alignment procedure by ExpressAlign®.

Access Tools and Kits through "Vehicle Measurements and Adjustments" on the VirtualView screen by pressing and holding the light pen or left mouse button down on any icon or vehicle measurement. A drop down menu will appear as shown. Press and hold the light pen or left mouse button down on any of the bar graphs. A drop down menu will appear.



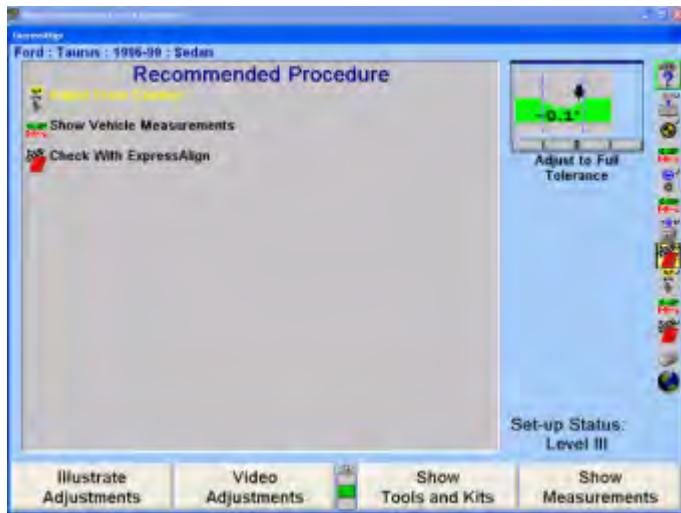
Select "Tools and Kits" from the drop down menu. The "Tools and Kits" screen for the angle that it was chosen from will appear.



NOTICE

The drop down menu can also be accessed using the tab key on the keyboard.

Access Tools and Kits from the ExpressAlign screen by selecting the "Show Tools and Kits" softkey.



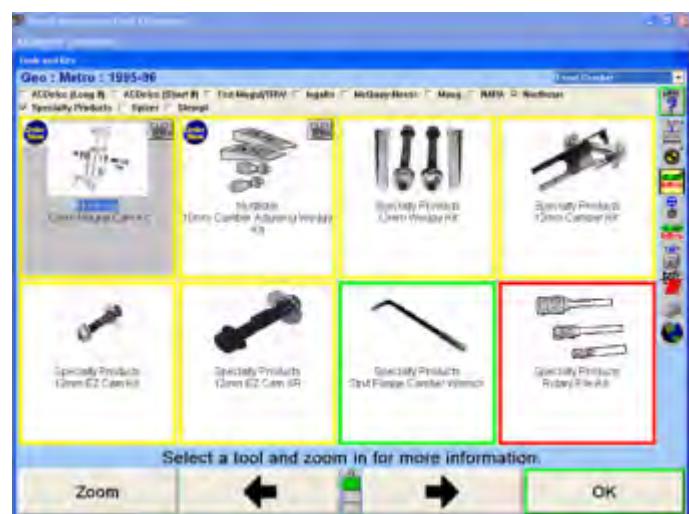
Access Tools and Kits from Illustrate Adjustments on the "Vehicle Measurements and Adjustments" screen by choosing "Illustrate Adjustments" from the softkeys. The "Adjustments Illustrations" screen will appear.



From the "Adjustments Illustrations" screen, select "Tools and Kits". The tools and kits for the angle that is being viewed will appear on the screen. In this example, the "Tools and Kits" screen for Front Camber will come into view.

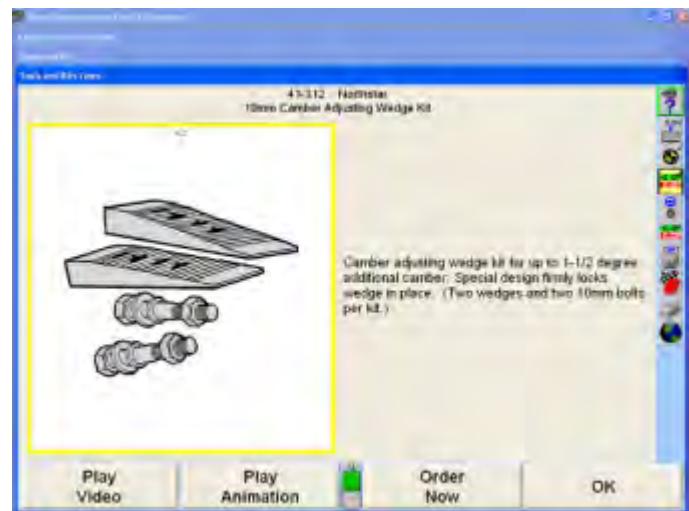
6.5.2. Tools and Kits Screens

When Tools and Kits is accessed, a screen for the angle from where Tools and Kits was selected will appear. In this example, the tools and kits for the front camber angle are shown.



Clicking on the button will zoom in on the selected tool or kit. Selecting a tool on the Tools and Kits main screen and clicking on Zoom will also give a closer look at the tool or kit that is selected.

Some tools and kits will also display a description or more information about the tool or kit. The following is the Zoom for a Northstar wedge kit.



Clicking "OK" returns to the previous screen.

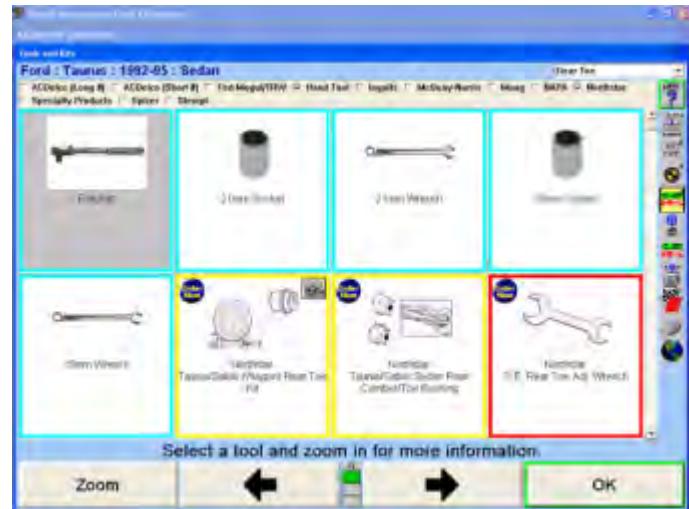
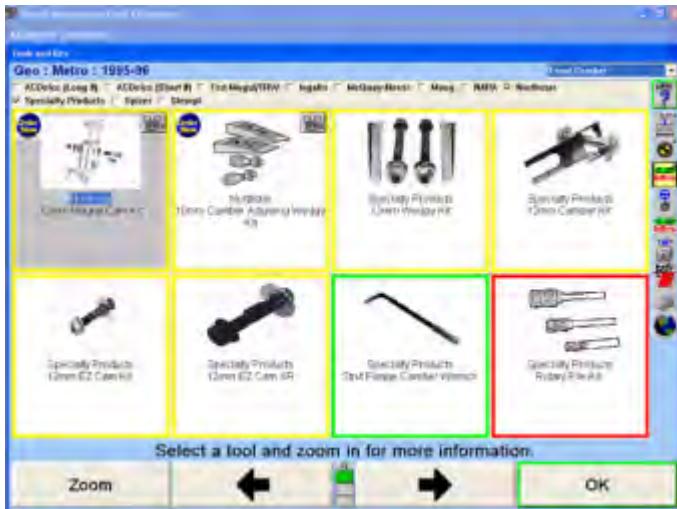
Changing the Angle

There are two methods of changing the angle for which Tools and Kits is to be viewed.

Change the Angle from the Tools and Kits Combo-box as follows:

Select the "Front Camber" in this view. Click on the Combo-box down arrow. A drop down menu will appear.

The angle that you want to view can be selected from this drop down screen by clicking on it.



Change the Angle from the Tools and Kits Softkeys as follows:

Choosing "Next Angle" from the following Tools and Kits softkeys will advance to the next angle.



For example, if the Front Toe angle is being viewed, and "Next Angle" is chosen, the tools and kits screen will advance to Front Camber. Next screens appear in the order that they are in on the Combo-box drop down menu.

6.5.3. Using Tools and Kits Videos



NOTICE

Out of Spec Angles cannot be viewed unless the Before Measurements have been saved.

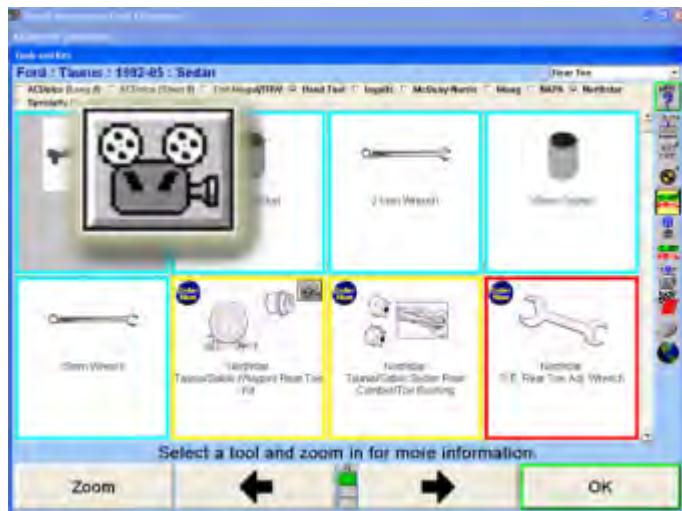
By choosing "Rear Toe", the Tools and Kits menu will change to the following screen. Note that the newly selected angle now appears in the Combo-box, and that the tools and kits icons have changed to those needed for rear toe adjustment.



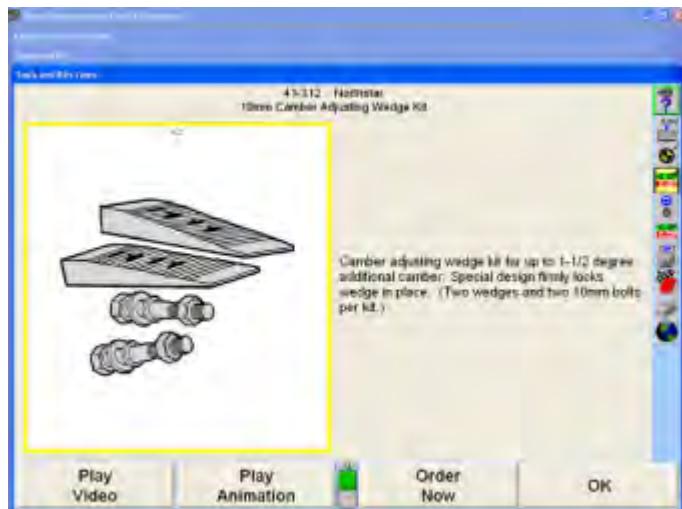
NOTICE

The video electronic key must be installed, and the WinAlign® Multimedia CD must be in a CD-ROM holder before the Tools and Kits videos can be accessed. The CD-ROM is not location sensitive and may be placed in any available CD-ROM holder in either an external or internal CD-ROM disk player.

Tools and Kits has several videos available for viewing installation of a particular kit, or the use of special tools. Videos are accessible from the Tools and Kits main screen by clicking on the icon that appears in the upper right corner of the tool or kit that has an associated video.



Tools or kits that have videos available will display a Video button . This example shows the zoom view of the 41-312 Northstar 10mm Camber Adjusting Web Kit with the Play Video and Play Animation options.



When play is selected, the video will appear and begin to play. The video screen will display a horizontal tool bar that can be used move to any point, from beginning to end, in the video. The special keys on the video bar perform specific tasks that can be activated by clicking on the button. Pressing will pause the video, and will restart the video after it has been paused. Pressing will return you to the Tools and Kits screen. After the video ends, the Tools and Kits screen will reappear.

6.5.4. Selecting Tools and Kits Manufacturers

Tools and Kits can be customized to display only the appropriate tools and parts for each shop. At the top of each page a list of manufacturers and hand tools will be available.



Select or de-select the checkboxes next to the individual manufacturers to display. Hand tools can also be selected or de-selected.

Individual vehicles and vehicle manufacturers will have different options at the top of the screen. The vehicle shown above is an early 80s Chevrolet 4x4 pickup. A 2002 Toyota Camry, shown below, only has one option for hand tools. No aftermarket kits currently exist for this vehicle.



All manufacturers can be selected at once by selecting the "Show All Manufacturers" softkey.

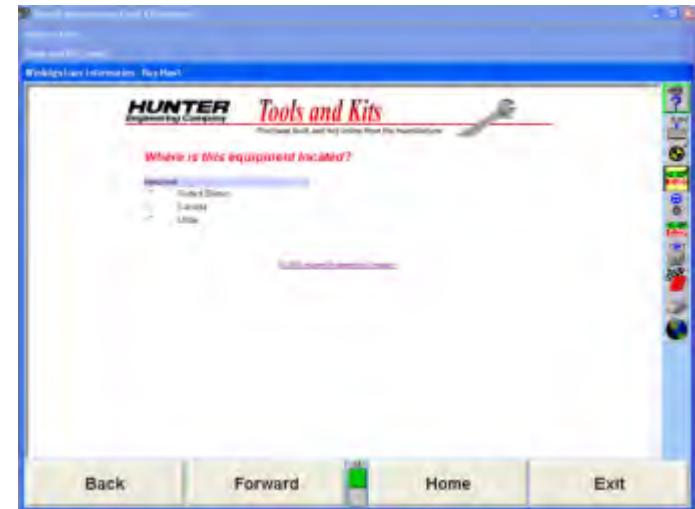
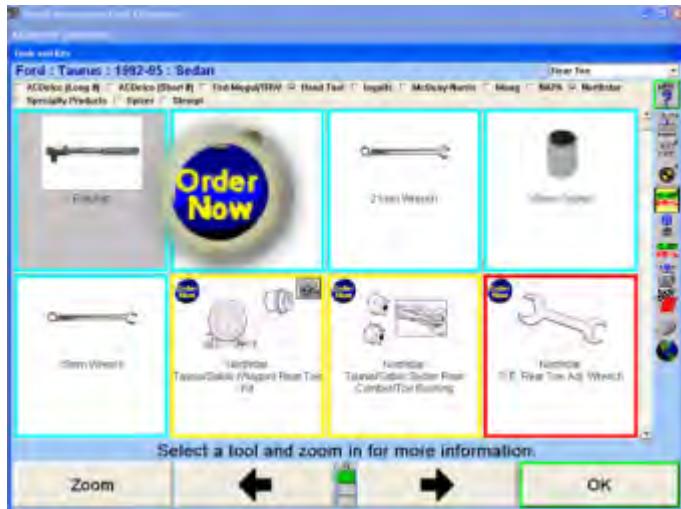
6.5.5. Ordering Tools and Kits Online

On certain specialty tools, kits, and parts an Order Now icon will be available. When zooming in on a selection that has this option a "Order Now" softkey will also be available.

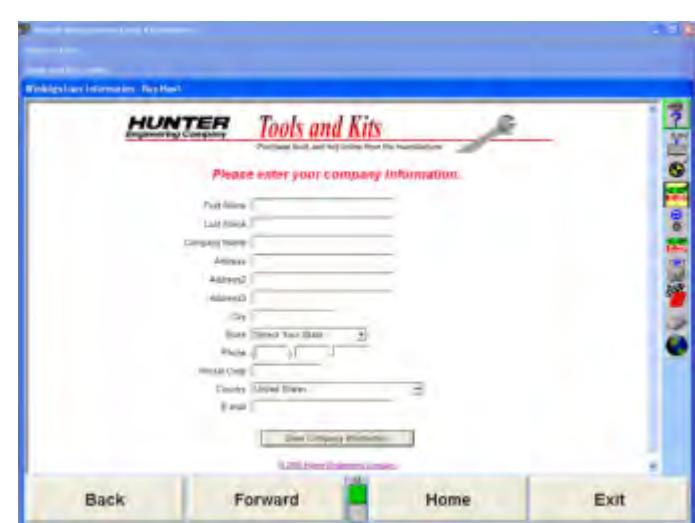


NOTICE

To use the Order Now option the aligner must have an Internet connection. All Order Now transactions must be completed using a credit card only.



When selecting "Order Now", WinAlign® will connect to the Internet and access a website for online ordering. The screen will display a detailed description of the part and its application.



Once the update is complete the site will return to the parts ordering page that will include the shipping information. Select "Order Now" to place the order request.

Upon the initial request to order parts the screen will not display any shipping information. Select "Edit Shipping Info" to create a shipping profile. Enter the country, and then fill in the Company Information order form. Select "Save Company Information" when complete. This information will be stored and saved for all future order requests.



When "Order Now" has been selected the program will open the appropriate supplier parts ordering page.



6.6. Transmitting Measurements for Auditing



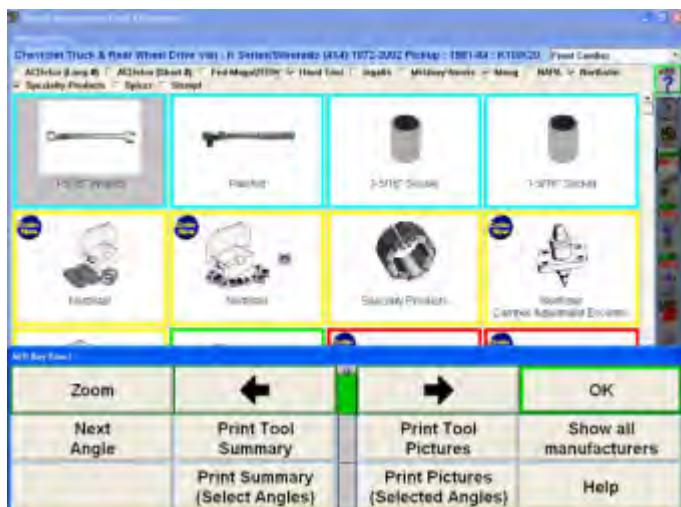
NOTICE

Refer to [Form 4224-T](#) for instructions.

Add the appropriate quantity to the cart and proceed with checkout. Each suppliers website ordering procedures may be different, but follow general online shopping methods.

6.5.6. Printing Reports

Several reports are available using the Tools and Kits softkey panel. Click the appropriate button for the report that is to be printed.



Print Tools and Kits List Reports

Print Summary (Select Angles) prints a list of tools and kits available for the angle that appears in the Tools and Kits Combo-box on the main Tools and Kits screen.

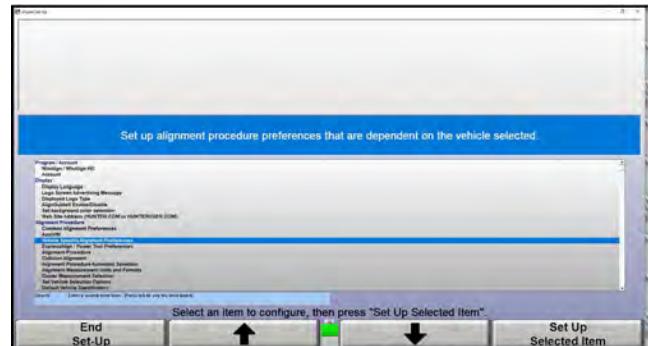
Print Tool Summary will print all of the tools and kits available for every angle for the vehicle. This will produce several pages.

7. ADAS and Collision Alignment



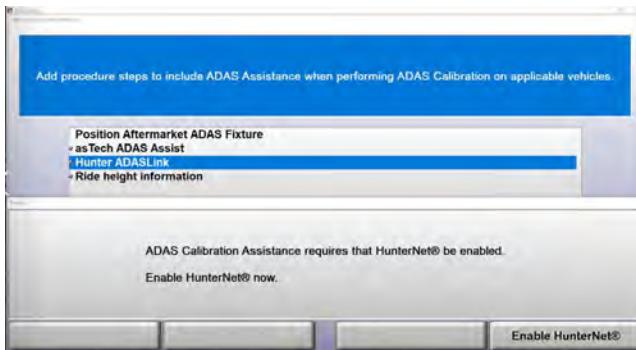
NOTICE

Prior to ADAS setup please ensure your customer has been properly set up on HunterNet 1. If not the below error will occur.



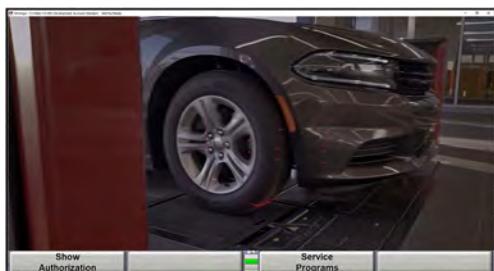
7.1. ADASLink Setup

1. From the WinAlign® Start Screen click on Service Programs.



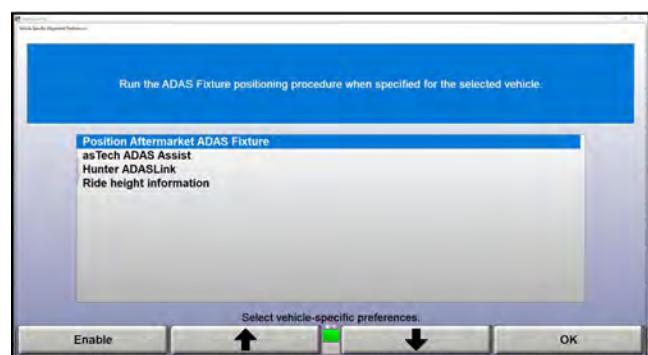
NOTICE

Currently ADASLink™ only supports Standard, Truck, Ford, and Ford HD Accounts. This does not include German or International Accounts.

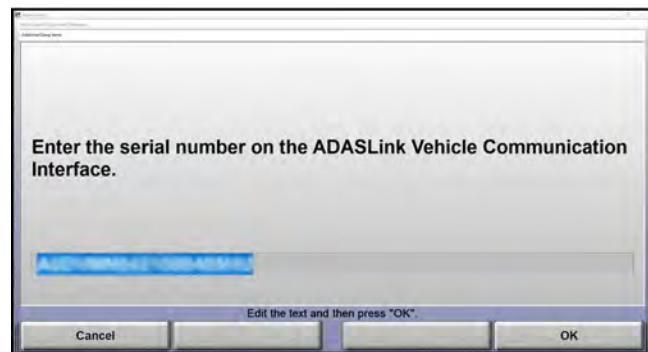


2. On the Aligner Set-Up Screen under Alignment Procedures select Vehicle Specific Alignment Preferences.

3. On the Vehicle Specific Alignment Preference screen select Hunter ADASLink and click OK.



4. At this point you will be prompted to enter the serial numbers for the ADASLink™ Vehicle Communication Interface (VCI), linking this module to this aligner.

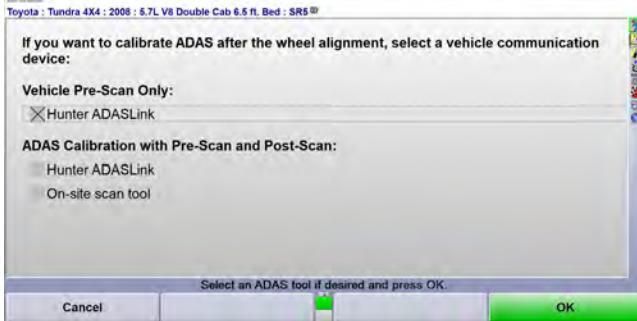


NOTICE

The Barcode Scanner will only pick up 17 digits. The last digit of the serial number must be entered manually.

7.2. Pre-Scan

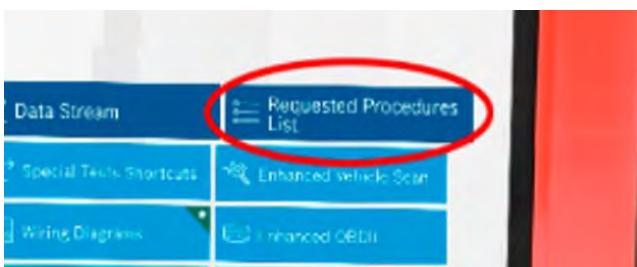
1. Begin the process as a normal alignment. Enter Vin and select Pre-Scan Only : Hunter ADASLink™.



NOTICE

Note that all scanned vehicles will remain on the VIN list until they have been marked as completed.

2. Plug the Hunter ADASLink™ VCI into the vehicle's diagnostic connector. **Be sure to select the Requested Procedures List on the ADAS Tool before clicking OK. Then follow on the screen instructions to begin the Pre-Scan.



NOTICE

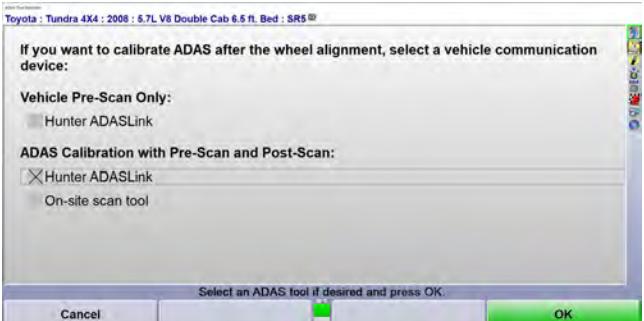
Scan Time will vary depending on the type of vehicle and the number of devices being scanned.

3. Complete all Measurements and adjustments. Once the Scan is complete a PDF will generate with your results. Click Print.

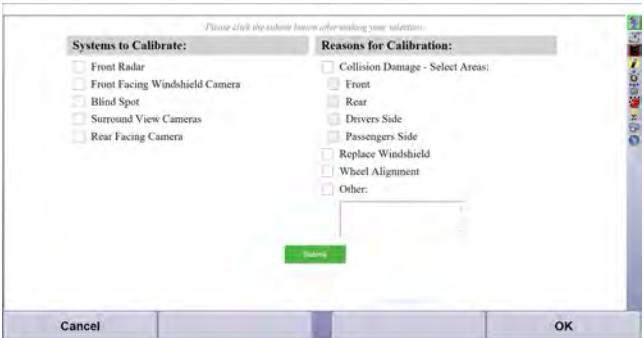


7.3. ADAS Calibration with Pre-Scan

1. Begin the process as a normal alignment. Enter Vin and select Hunter ADASLink™ under ADAS Calibration with Pre-Scan and Post-Scan.



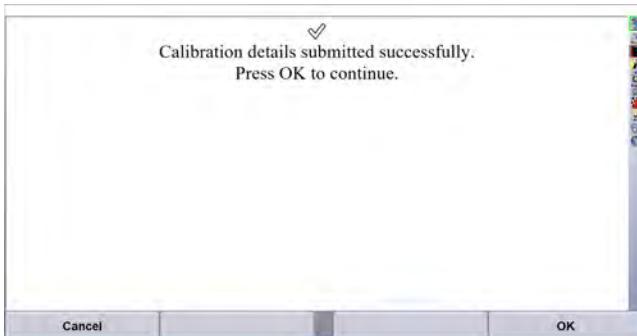
2. Once you arrive on the System Choice screen select which systems to calibrate and any valid reasons for calibration.



DANGER

DO NOT CLICK OK, You Must Click the Submit Button to enter your selected options for scan.

3. Once you have submitted the needed calibration requests you should see this screen. Now press OK and proceed with wheel alignment or measurements.



NOTICE

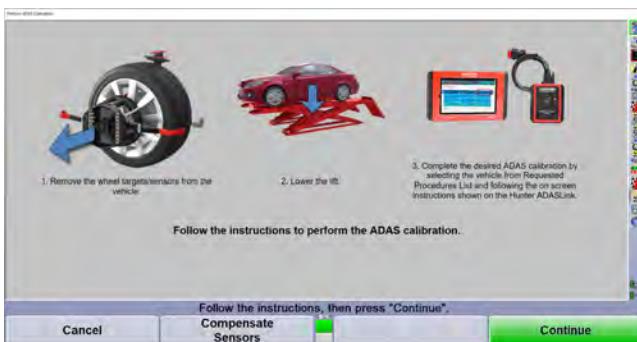
When Performing the Pre-Scan do not click Mark As Complete as this will negate the Post Scan and you will not be able to return and must restart the scan.

4. Once measurements or wheel alignment is done including, steering angle sensor, You should now be on the below screen. After completing the Calibrations and Post Scan. Follow on screen instructions, choose requested procedures and click continue to proceed after Pre and Post Scan and calibration.



DANGER

Before clicking continue ensure that you have completed Calibrations and Post Scan.



NOTICE

Scan Time will vary depending on the type of vehicle and the number of devices selected for reset.

5. Once the scan is complete the system will generate the below form confirming the requested calibrations.

If the PDF does not generate continue to press Refresh until the completed form is displayed.

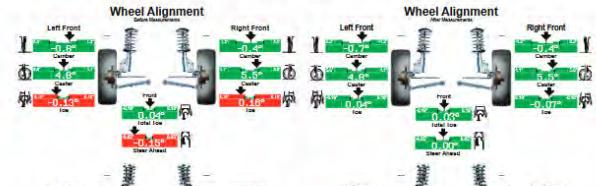
R012345
2/21/21 11:15 AM
JL Lemont
4321 Main St
Camberwell, TN 38467
aleinmont@email.com
Tel: (423) 555-9376



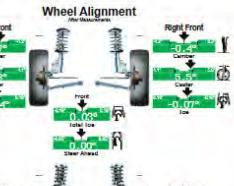
HUNTER
Engineering Company

ADDRESS 1
ADDRESS 2
PHONE

Nissan : Leaf : 2020 (from VIN_KC303774) : 62kWh Li-Ion Battery (LEAF Plus) : with 215/50R17 Tire ExpressAlign Total Alignment



Advanced Measurements - Before



Advanced Measurements

Left	Front	Right	Left	Front	Right
12.2°	SAI	11.7°	12.1°	SAI	11.7°
11.4°	Included Angle	11.3°	11.4°	Included Angle	11.3°
-1.31°	Turning Angle Diff.	-1.31°	-1.31°	Turning Angle Diff.	-1.31°
37.87°	Maximum Left Steer	32.21°	37.87°	Maximum Left Steer	32.21°
31.33°	Maximum Right Steer	36.46°	31.33°	Maximum Right Steer	36.46°

Safety System Alignment™

Complete

Required OEM procedures performed according to vehicle service documentation.

Before

(ESC) Electronic Stability Control +0.5°

After

(ESC) Electronic Stability Control +0.0°

HUNTER
Engineering Company

NAME
ADDRESS 1
ADDRESS 2
PHONE

Mon-Fri: 8:15 am - 4:00 pm
Sat: Closed
Sun: Closed
Alex Nicholas, Service Manager

February 21, 2021
10:15 AM

Nissan : LEAF : 2020 (from VIN_KC303774) : 62kWh Li-Ion Battery (LEAF Plus) : with 215/50R17 Tire



Safety System Alignment®

V: 4.13.1.4 Powered by:

Front Facing Camera
Static Camera Aiming

Cameras are used to monitor vehicle surroundings for Advanced Driver Assistance Systems (ADAS). These systems assist the driver using warnings, brakes, or steering assistance to maintain lane position or to mitigate collision risk. Calibration helps to ensure the system performs properly.

Diagnostic Health Report

V: 4.13.1.4 Powered by:

Summary

6 Diagnostic Trouble codes

27 Modules Scanned

Modules Scanned

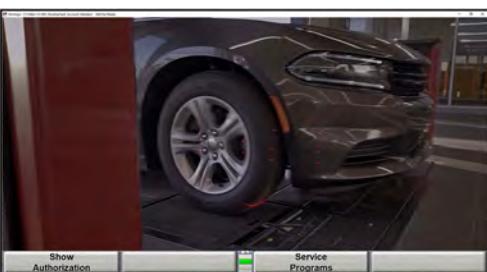
- EV BATTERY MAIN
- EVINEV VEHICLE CONTROL MOD
- MOTOR CONTROL
- ON BOARD CHARGER
- SHIFT BY WIRE
- ABS
- TIRE PRESSURE MONITOR
- AIRBAG
- VEHICLE SOUND FOR PEDESTRIANS
- INTEGRATED DYNAMIC-CONTROL MOD
- 5CH CAN GATEWAY
- AROUND VIEW MONITOR
UD428 - Steering Angle Sensor Calibration Incomplete
00
- BODY SYSTEMS
- E-ACT BRAKE SYSTEM
- ELECT HILL START/PARK BRAKE
- ELECTRIC POWER STEERING/ADAS
- EV BATTERY 2
- INTEGRATED/ADAPT CRUISE CONTROL
- INTELLIGENT POWER DIST MOD
- LANE DEPARTURE WARNING SYSTEM
- LASER/RADAR
C1A98 - STRG SEN_CIR/CMPSYS_OPR_OBST OR BLKO
97
- METER
- MULTI AV
- SIDE RADAR REAR LEFT
- SIDE RADAR REAR RIGHT
- SONAR
B2720 - CORNER SENSOR (RL)
34
B2721 - CENTER SENSOR (RL)
34
B2722 - CENTER SENSOR (RR)
34
B2723 - CORNER SENSOR (RR)
34
- TELEMATICS

Modules Not Scanned

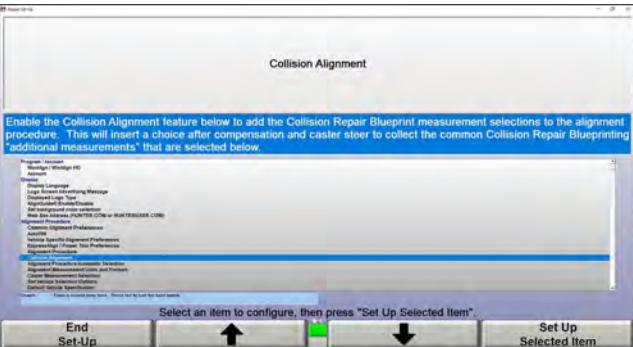
- 3CH CAN GATEWAY
- ACCELERATOR PEDAL ACTUATOR
- HEAD LAMP LEVELER
- INTEGRATED/ADAPT CRUISE CONT 2
- INTELLIGENT KEY
- IVC INTER VEHICLE COMM

7.4. Collision Alignment Feature and Collision Repair Blueprint

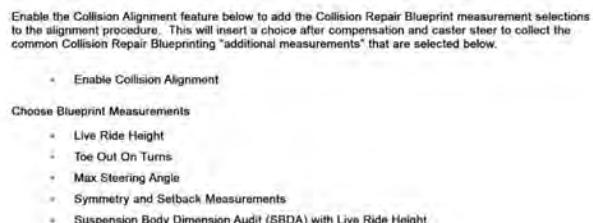
1. Start by enabling the Collision Alignment Feature on the Hunter Aligner. Go to Service Programs



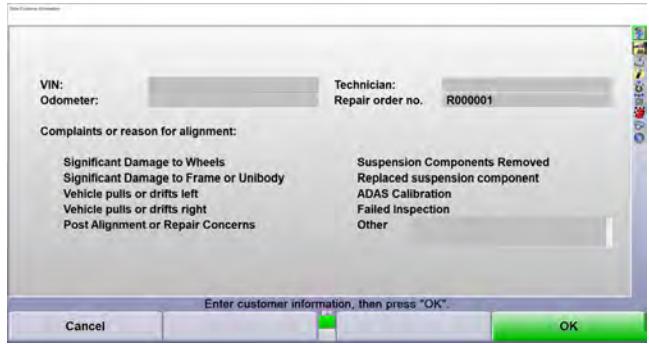
2. Select Collision Alignment from the Aligner Set-Up Menu and click Set Up Selected Item.



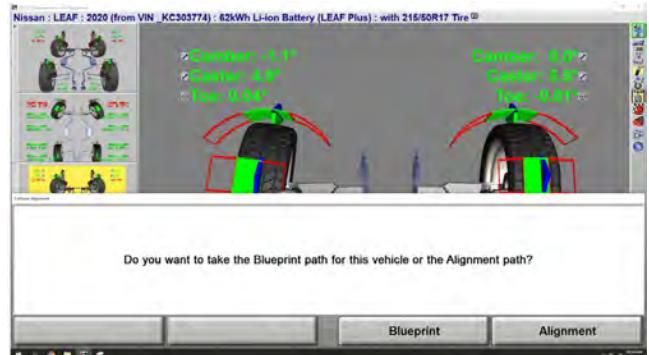
3. This will take you to the Collision Alignment Screen. Click the box next to Enable Collision Alignment as well as all Blueprint Measurements you want to obtain and click OK.



4. End Setup. begin Alignment

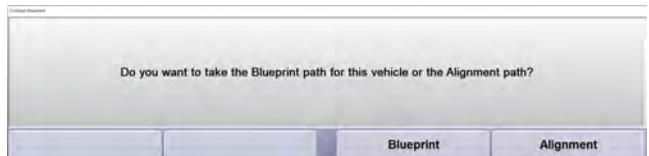


5. You will now be taken to the Complaints and Reasons Page. Enter all relevant information and valid reasons for alignment then press OK to proceed.

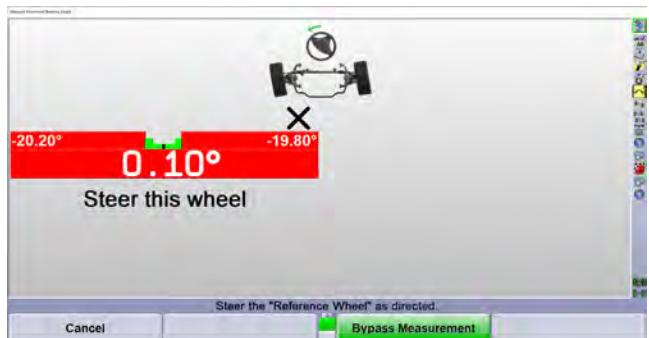


After Caster Steer you will see a Blueprint (K3) or Begin Alignment (K4) - Choose your path.

6. You will be prompted to select the Blueprint Path or the Alignment Path (Standard Alignment). Select Blueprint.



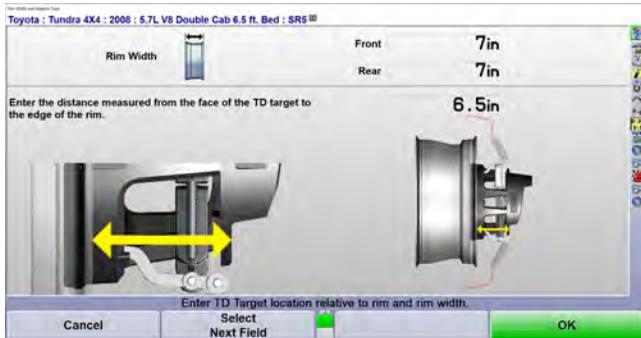
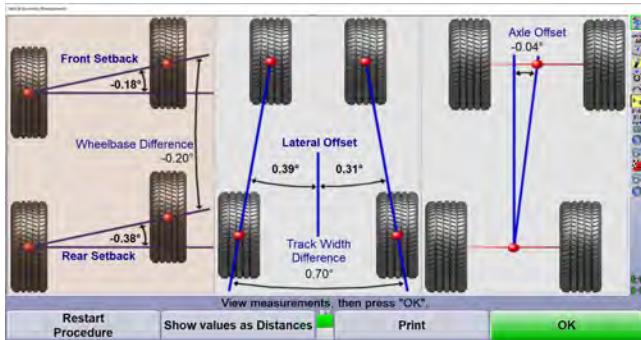
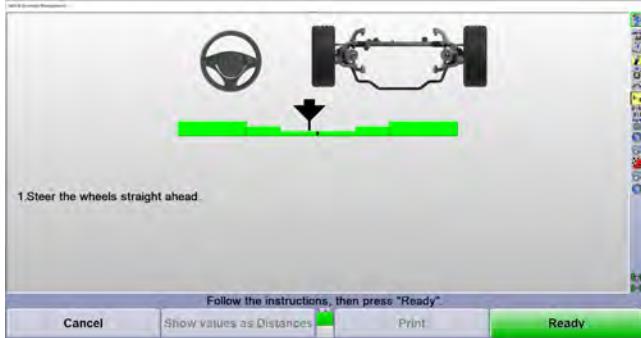
7. Follow On Screen Instructions. This will take you through the initial Angular Measurements, Pre-Scan (if the customer has the ADAS Scan Tool and selected Pre-Scan), the Standard Alignment, and Finish with the Current Repair Angular Measurements.





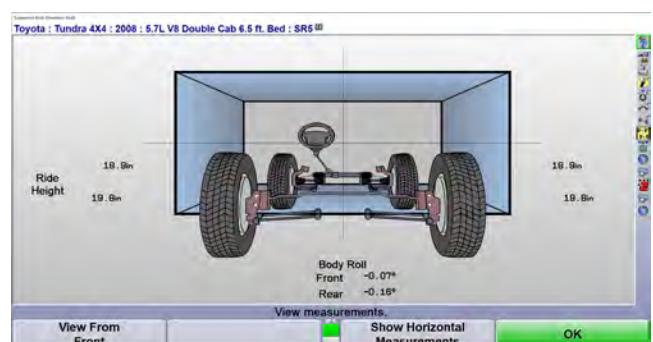
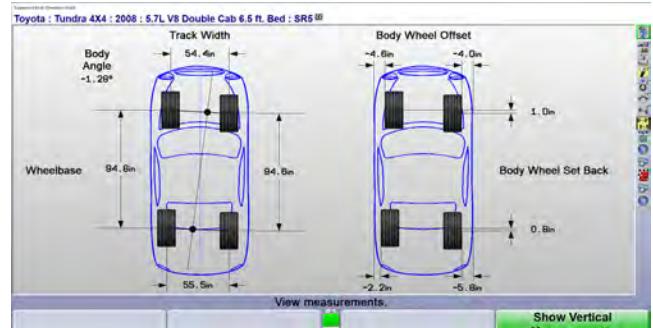
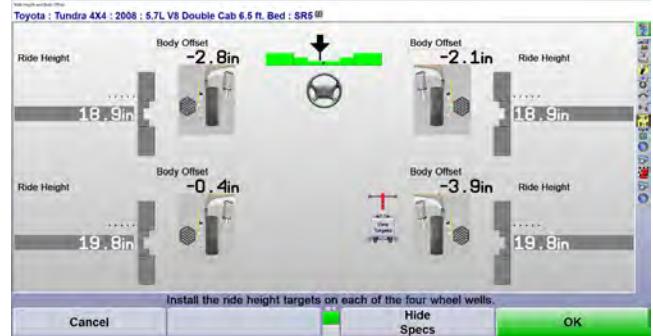
NOTICE

Please note that Wide Angle and Ride Height targets may be needed for certain procedures.

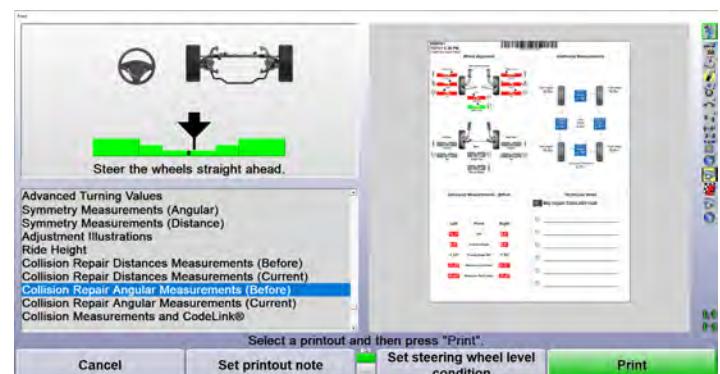


NOTICE

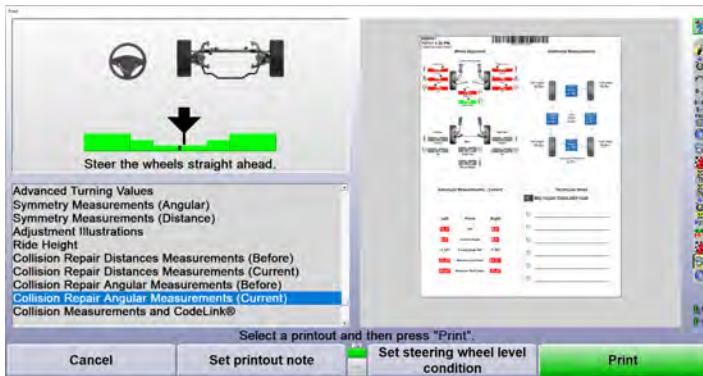
Please note that the distance entered from the edge of the rim to the face of the target can vary depending on the type of Rim. i.e. Deep set Rims or Rims that extend past the tire must be taken into consideration when measuring.



Results Prior to Standard Alignments (Before)



Results After Standard Alignment (After)



7.5. Setup for Ultimate ADAS



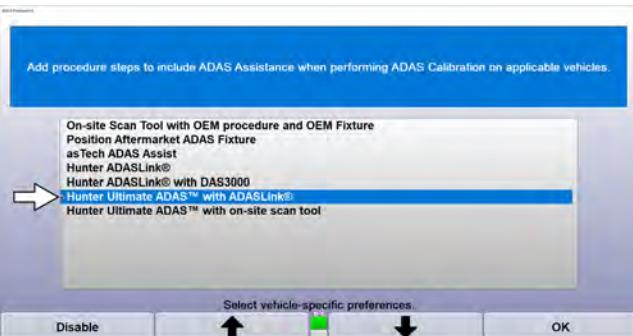
NOTICE

Prior to Ultimate ADAS™ setup please ensure your customer has been properly set up on HunterNet® 2. If not the below error will occur.

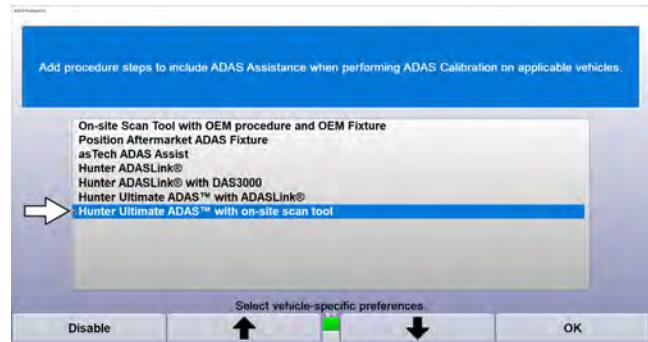
1. From the WinAlign® Start Screen click: Service Programs > Alignment Procedure
2. Select the Alignment Sensor Type For Ultimate ADAS™: UAD1



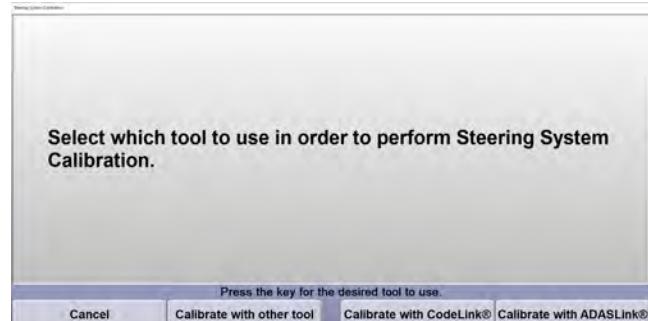
3. Go to Alignment Procedure and ADAS Preferences
Select all options that are applicable only. Below are examples:
Hunter Ultimate ADAS™ with ADASLink® (Aftermarket)



Hunter Ultimate ADAS™ with on-site scan tool (For OEMs such as Honda)



4. Select which tool to use in order to perform Steering System Calibration



7.6. Ultimate ADAS™ Calibration Procedure

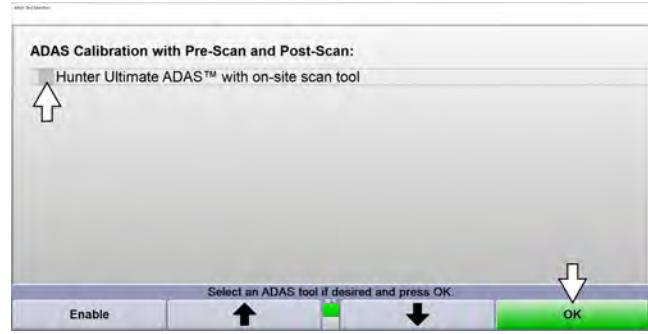


NOTICE

If using the ADASLink for Ultimate ADAS Procedures, please see [form AT08224-00 for guidance](#).

New cars come outfitted with advanced driver assistance systems (ADAS). These advanced safety systems use sensors to gather information about vehicle surroundings. As with all sensors, vehicle ADAS sensors are only as accurate as they are calibrated to be.

1. Select your vehicle specifications by VIN
2. Select your ADAS Tool Selection and Press "OK"



Select an ADAS tool if desired and press OK.



NOTICE

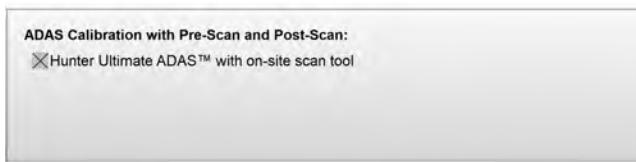
VIN is REQUIRED for ADAS calibration



NOTICE

Ultimate ADAS™ Calibration Application opens in a separate window from WinAlign®

3. If VIN was not initially entered, Press "Recall by VIN#.." to enter VIN.
Press "OK" to continue

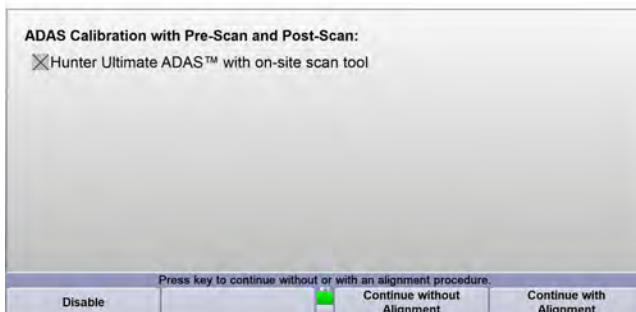


ADAS Calibration Assistance requires a VIN for the selected vehicle.
Recall by VIN now.

Cancel

Recall by
VIN #...

Choose to continue the ADAS Calibration "with alignment" or "without alignment"



Press key to continue without or with an alignment procedure.

Disable

Continue without
Alignment

Continue with
Alignment

If "Continue with Alignment" is chosen, then the procedure is Alignment then ADAS calibration.
If "Continue without Alignment" is chosen, then the procedure is ADAS Calibration only. The Alignment procedure is bypassed.



NOTICE

If "Continue without alignment" is chosen, alignment measurement will be generated and if needed an alignment can be performed.

Example: Roll comp is completed but alignment is not in specifications, the operator would not need to restart to get caster and complete adjustments.

4. Perform roll compensation for targets.
This step is required for Alignment and ADAS Calibration procedures.
5. Perform alignment if selected.



WinAlign® App Icon



Ultimate ADAS™ Calibration App Icon

6. Select desired ADAS Calibrations after wheel alignment: Example:



Check box which calibrations you wish to perform or Check All.

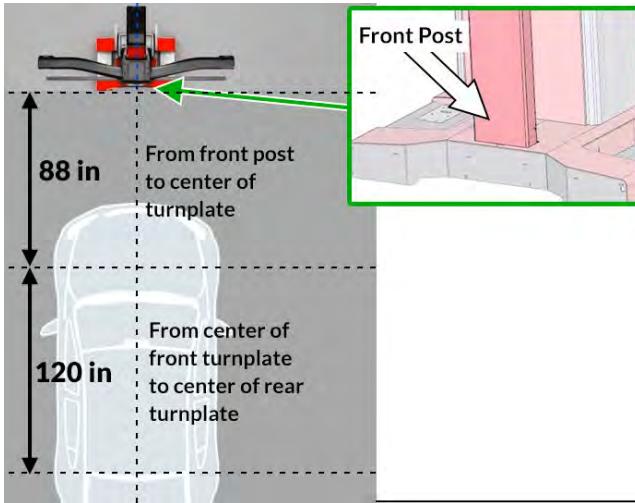


Select the desired calibration. The calibrations can be performed in any order.

Press "Start Calibration Procedure"



7. Ensure fixture is in Home position before starting. Center of front turnplates (should be 88 inches from the front post. Center of rear turnplates should be 120 inches from center of front turnplates.



8. Ensure targets are attached, in place and target area is green (visible).

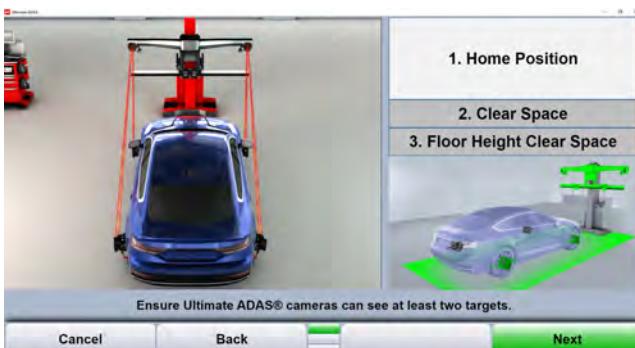


NOTICE

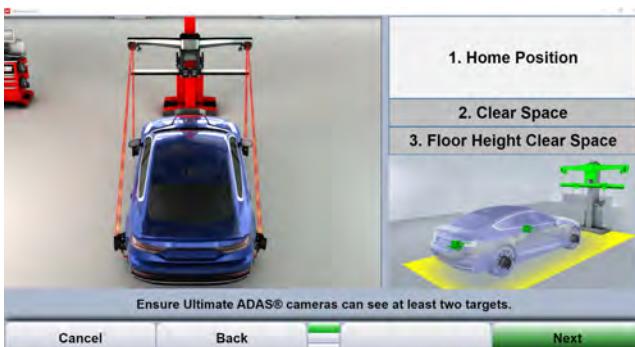
A Minimum of TWO targets are required to be green (visible)

Proceed by following on-screen instructions.

■ GREEN area Indicates targets are VISIBLE by the cameras



■ YELLOW area Indicates targets are NOT stable or only partially visible by the cameras



■ RED area Indicates targets are NOT visible by the cameras

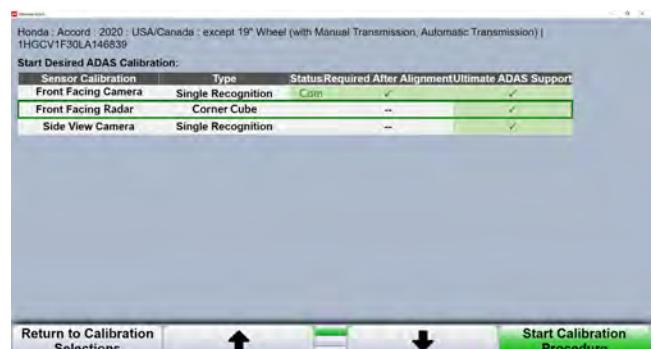


- Follow the on-screen instructions to perform the selected ADAS Calibration.
- Once a calibration procedure is completed, the list of selected calibrations will appear again and the status column will be updated.
- Choose another calibration procedure from the list and proceed as instructed.



NOTICE

Press "Return to Calibration Selections" to add or remove desired calibrations.



- Once all the selected calibrations are complete, the calibration report is generated.

Example reports:



Wheel Alignment
WinAlign 18.0 – 2023.1 Specification Database

Before Measurements

Left Front	Front	Right Front	Left Front	Front	Right Front
Steer Ahead	Total Toe	Caster	Steer Ahead	Total Toe	Caster
0.1° Toe	-0.05°	-2.7° Caster	0.1° Toe	-0.1°	-2.7° Caster
-0.1° Caster	-0.02°	-3.7° Toe	-0.1° Caster	-0.1°	-3.7° Toe
-0.1° Toe	-0.25°	-0.02°	-0.1° Caster	-0.03°	-0.02°
-0.49°	-0.46°	-0.02°	-0.05°	-0.03°	-0.02°
-0.25° Thrust Angle	-0.25°	-0.02°	-0.05°	-0.03°	-0.02°

Current Measurements

Left Front	Front	Right Front	Left Front	Front	Right Front
Steer Ahead	Total Toe	Caster	Steer Ahead	Total Toe	Caster
0.1° Toe	-0.05°	-2.7° Caster	0.1° Toe	-0.1°	-2.7° Caster
-0.1° Caster	-0.02°	-3.7° Toe	-0.1° Caster	-0.1°	-3.7° Toe
-0.1° Toe	-0.25°	-0.02°	-0.1° Caster	-0.03°	-0.02°
-0.49°	-0.46°	-0.02°	-0.05°	-0.03°	-0.02°
-0.25° Thrust Angle	-0.25°	-0.02°	-0.05°	-0.03°	-0.02°

Steering System Reset

Before	Current
Electronic Stability Control (ESC) +0.5°	✓ Electronic Stability Control (ESC) +0.0°

Repair Order: RO13857

VIN: 5FNYG1H76PB002370

Front Facing Camera
Single Recognition

Forward-facing cameras track and analyze your driving environment. These components often assist with lane departure warnings, traffic sign detection, forward collision warnings, adaptive cruise control, pedestrian detection, and automatic high beams. Refer to your vehicle's user manual to determine which specific functions it provides.

Targets used:
#2, #4 Honda 120mm

Workspace clear of obstructions
✓ Designated area confirmed
Targets placed in front of vehicle
✓ Targets 3D position and orientation confirmed
Calibrate vehicle forward facing camera to target
✓ Calibration confirmed

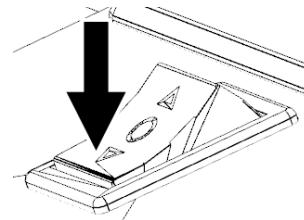
Hunter Ultimate ADAS Equipment Calibration Status
Last Calibration: 10/11/22



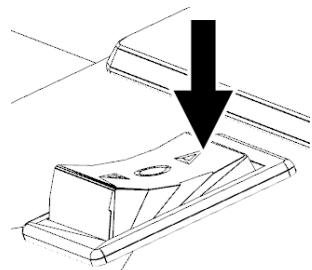
7.8. Moving the Cameras Up and Down

A button on the center console of the fixture will allow you to move the camera beam up and down.

Push and Hold down button to lower the beam



Push and Hold up button to raise the beam

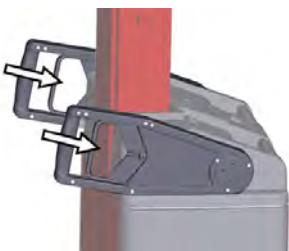


For RackTrack™ Instructions, refer to "RackTrack Movable Camera Selection"

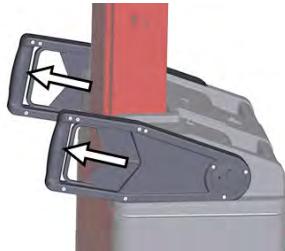
7.7. Moving the Calibration Fixture

To move fixture, grab handles and squeeze triggers on both handles to unlock fixture wheels. Push or pull fixture where needed.

Locked Position: Unmovable



Un-locked Position: Movable

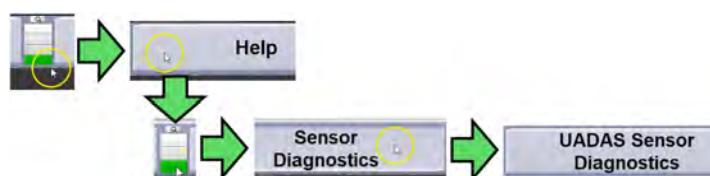


Arm handles can also be rotated for the option to push or pull fixture from either side.

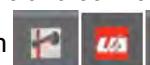
Rotating Handles

7.9. Ultimate ADAS Sensor Diagnostics

From the WinAlign home screen, select the 4th button down on the menu > Help > 3rd button down > Sensor Diagnostics > UADAS Sensor Diagnostics



Please wait, Ultimate ADAS will initialize and connect to WinAlign. UADAS application will open

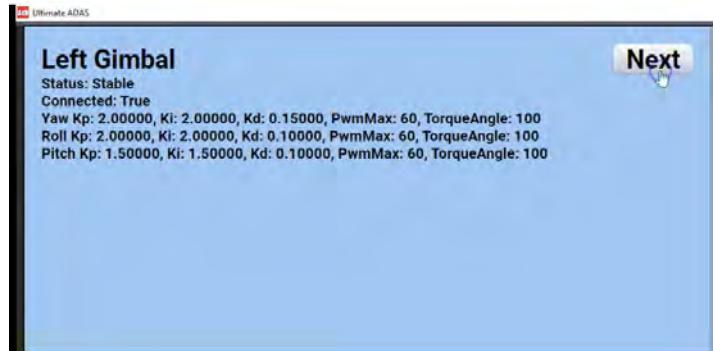
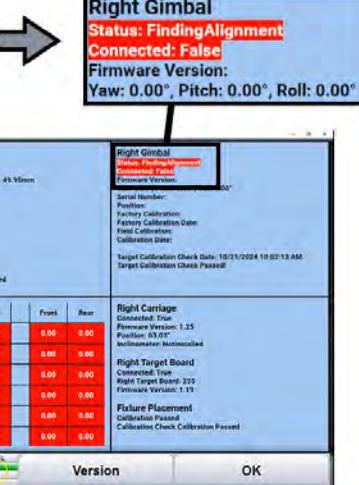


Initial screen will show a summary of components, statuses, and testing options.

1st tier navigation: Gimbal | Actuator | Version | OK

2nd tier navigation: Height | Target

Statuses highlighted in red are not connected/false/not found



NOTICE

Statuses highlighted in red indicate no connection / failure or missing data.

7.9.1. Gimbal Diagnostics

Options for testing or measuring both Left and Right Gimbal include:

Time of Flight (Yaw, Pitch, Roll) | Aim Gimbal | Enable Red Dot | Enable Green Line

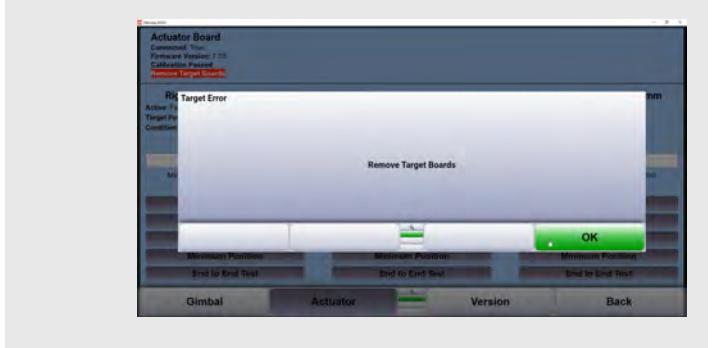


For each Gimbal window click "Next" for additional information, and click "Next" again to return to Gimbal home screen.



NOTICE

If not prompted already, remove target boards from UADAS tower before performing any actuator tests.



As an example, after removing target boards and clicking "End to End Test" button options will be grayed out while running the test.

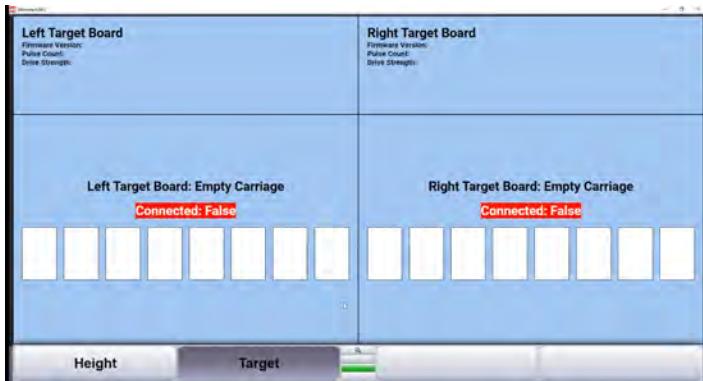


Once complete results and condition will be shown at the top of each Position.

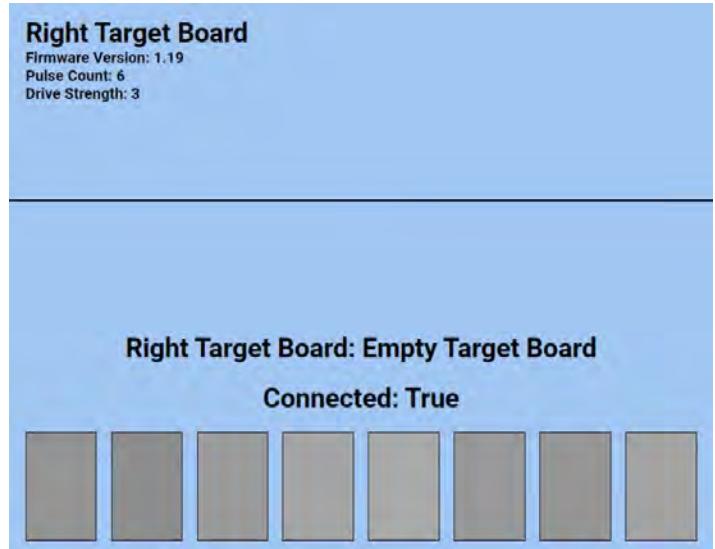


7.9.3. Target Diagnostics

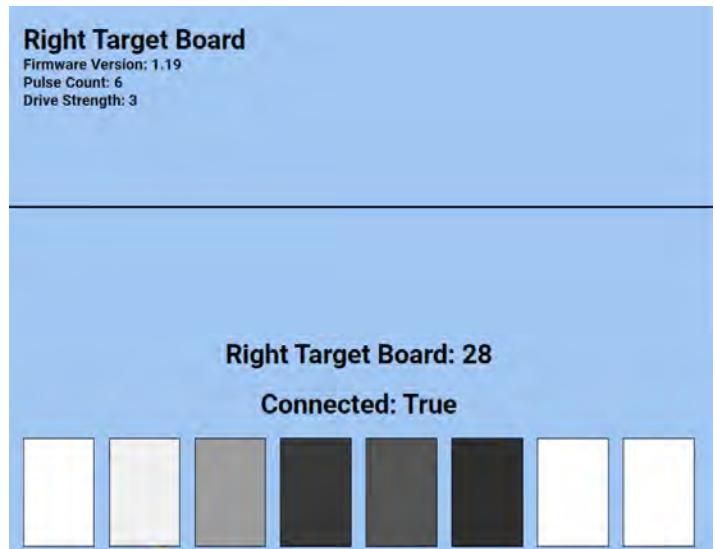
Target screen displays status of target board and connection as well as the target ID. When no target board is connected status will show False.



Next example shows Right Target Board Connected - with no target attached.

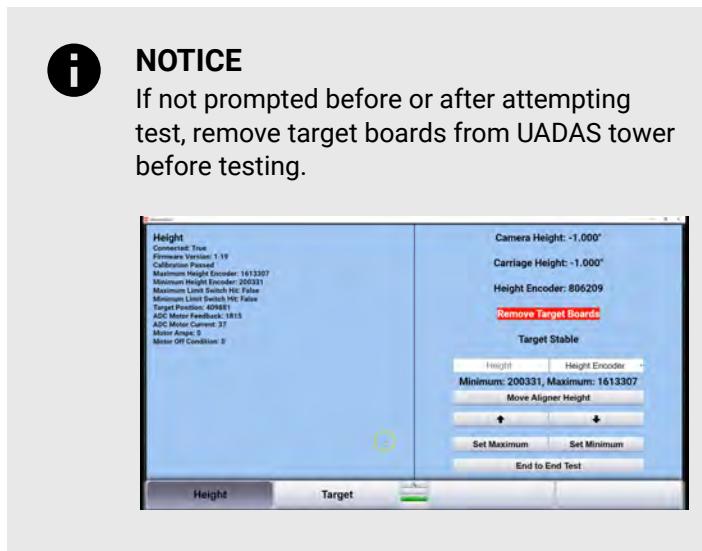


Next example shows Right Target Board Connected - with target attached.

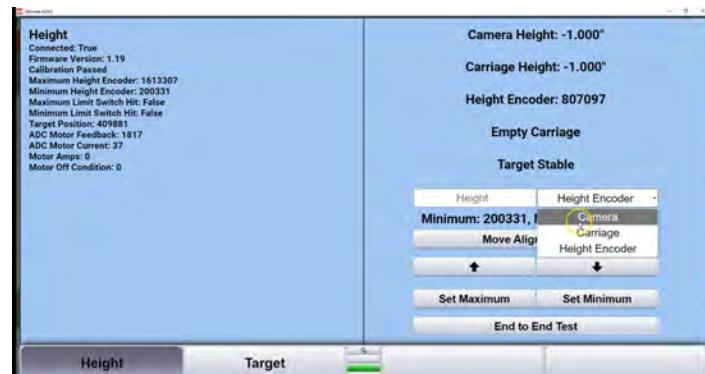


7.9.4. Camera Height Diagnostics

Initial Height screen shows status of Camera Height, Carriage Height, Carriage Target Board, and Target Validity/Stability.



Testing Height options are provided for all 3 components: Camera | Carriage | Height Encoder (shown on next image)

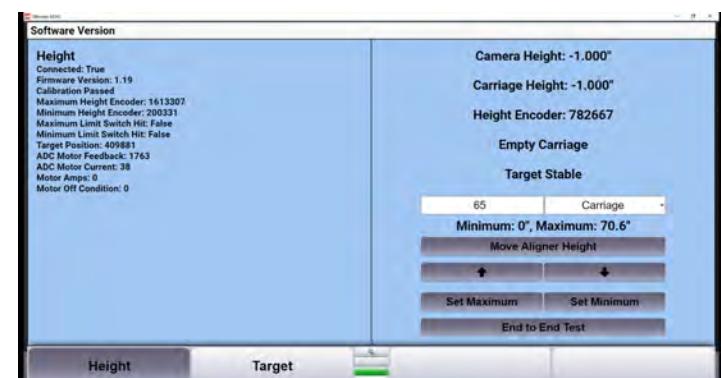


NOTICE

Before testing Camera or Carriage Height ensure a minimum of TWO TD wheel targets are installed in correct position for a valid floor plane.



Options will be grayed out during Height test, shown on next image.



7.9.5. Version

The Software Version screen will display a summary of your current UADAS applications & versions being used.



8. Equipment Information

8.1. Conventional Sensors

8.1.1. Care and Cleaning of Conventional Sensors

When cleaning the sensors, use a mild window cleaning solution to wipe off the sensors and adaptors.



WARNING

Do not hose down or submerge the sensors. Do not spray cleaner on sensor. This could cause damage to the electrical system and optical components.

Keep wheel adaptor rods cleaned and lubricated. Lubricate as needed with a coating of light lubricant such as WD-40.



WARNING

Do not lubricate center screw shaft.

8.1.2. XF Pod (DSP700 Series Sensors Only) .

The DSP700 Series sensors communicate with the aligner console using Extra High Frequency (XF). Radio waves are transmitted and received from the sensors and the XF Pod.

Occasionally the XF Pod may receive interference from electronic devices in the neighborhood (microwaves). The sensors and XF Pod may be configured to use different radio frequencies to minimize interference.

The XF system transceiver generates power radio waves in the range of 2.4 GHz. Radio waves at these frequencies reflect off most objects, resulting in an indoor and outdoor range of approximately 100 feet (30 meters).

Interference has occurred when the XF Pod does not receive the radio waves. If this happens, move the mobile cabinet approximately 2 or 3 inches (51 or 76 mm) in any direction.

Temporary interference problems can be bypassed by connecting the sensors to the aligner console with the sensor cables.

8.1.3. XF2 Pod (DSP700 Series Sensors Only)

The DSP700 Series sensors communicate with the aligner console using Extra High Frequency (XF). Radio waves are

transmitted and received from the sensors and the XF2 Pod.

Occasionally the XF2 Pod may receive interference from electronic devices in the neighborhood (microwaves). The sensors and XF2 Pod may be configured to use different radio frequencies to minimize interference.

The XF system transceiver generates power radio waves in the range of 2.4 GHz. Radio waves at these frequencies reflect off most objects, resulting in an indoor and outdoor range of approximately 100 feet (30 meters).

Interference has occurred when the XF2 Pod does not receive the radio waves. If this happens, move the mobile cabinet approximately 2 or 3 inches (51 or 76 mm) in any direction. Temporary interference problems can be bypassed by connecting the sensors to the aligner console with the sensor cables.

8.1.4. Precautions for Systems Equipped with XF Cordless Sensors

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

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference's that may cause undesired operation of the device.



WARNING

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

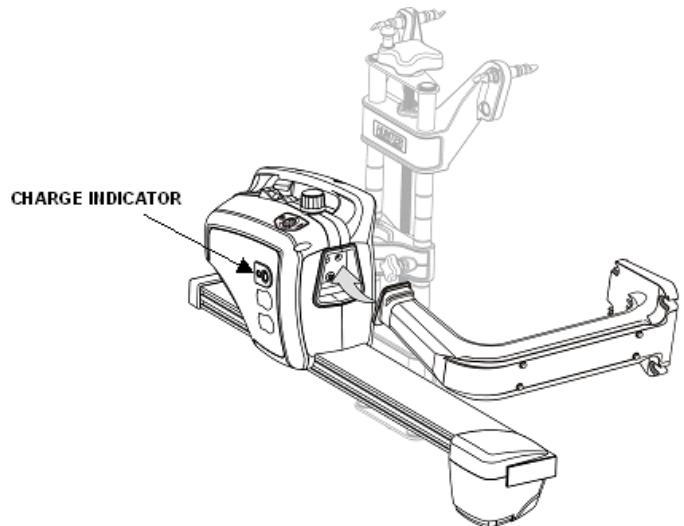
8.1.5. Charging Conventional Sensor Batteries (XF Sensors Only)

Each sensor contains a 12VDC sealed lead acid rechargeable battery. To get the maximum life out of the batteries in the sensors, follow these three rules:

If the sensors are not in use, charge them.

Switch sensors OFF during charging if you are using cables.

Charge for eleven to thirteen hours, and/or provide an extended charge time (24 hours or longer) at least once a week.



NOTICE

Make sure the main power switch at the rear of the console is left on and the outlet that supplies power to the aligner is on. K, R, and P cabinets are equipped with a computer, printer and monitor, but still provide power to the charging stations when using the standby power switch. This standby power switch is located on the front or side of the cabinet.

The S, SMT-CKD and W cabinets do not have a standby power switch. The computer, printer, and monitor may be switched off independently from the main power switch.

To prevent premature degradation of battery performance, the charger has to replace 125% of the energy that was removed from the battery. It is not necessary to fully discharge the batteries before charging. However, it is important they be charged fully.

Charging Information

To recharge the batteries when the sensors are not in use, place the wheel adaptor sensor assemblies on the cabinet storage hanger and leave the main aligner power on. The shoe on which the sensor hangs acts as the (neg) terminal, and the insulated contact is the + (pos) terminal.

Any time batteries are being charged the charge indicator light on the sensor will be illuminated.

The charge indicator light turning from red to yellow is an indication that the charging mode has switched from a fast charge mode into a trickle charge mode. It does not mean that the battery is 100% charged. A fully discharged battery should be allowed to trickle charge a minimum of five hours to ensure a full charge. The charge indicator light turns green after approximately 6-8 hours of trickle, indicating the charger has entered float mode, which maintains the battery at full charge indefinitely.

You should expect at least 8 hours of continuous use from a fully charged battery.

If you are not getting this amount of usage time, the most likely cause is inadequate charging time.

Batteries that are consistently subjected to partial charging rather than full charge cycles will permanently lose capacity.

Charging time for a fully discharged battery with the sensor power switch turned off is 11 to 13 hours. Three or four times this interval would be required if the sensors were left on during the charge cycle. It is very important that the sensors be turned off during charging. The sensors power switch is located on the front of the sensor above the two cable connectors. When the sensor is placed on the storage hanger, it will automatically turn off.

Charging overnight with the sensors power switches set to Off will provide a proper charge. Our charging system cannot over-charge the batteries. If you're not using the sensors, charge them!

The sensor batteries are rated for 200 full charge/discharge cycles, making their life expectancy about one year for the customer that consistently discharges them

100%. Life expectancy for batteries with lower usage can be significantly longer.

100% Discharge	200 Cycles
50% Discharge	450 Cycles
30% Discharge	1200 Cycles

Tips to prolong battery life

When the sensors are not being used to perform alignments, they should be stored on the charging hangers with sensor power switched off. At a minimum, turn the sensors off between alignments. Any charging accomplished throughout the day helps maintain the batteries at peak performance, and helps extend their life.

If you have one day out of the week when alignments are not performed, you can let the sensors charge continuously for 24 hours or longer. This should undo the effects of any undercharging that occurred during the previous week. This sort of prolonged charging will only be effective at restoring full capacity to the batteries if performed regularly. Once a week is the recommended minimum.

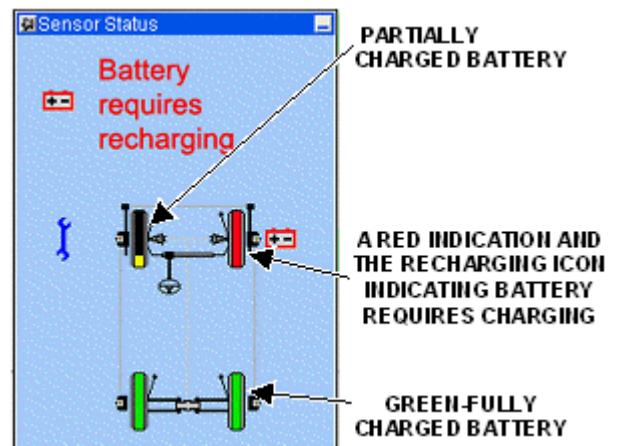
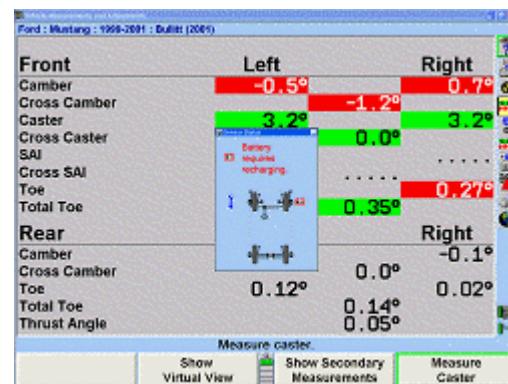
When is it time to replace the batteries?

If after a full charge the battery does not last for the expected 8 hours, you should put it through one or two sessions of extended charge time (24 hours or longer). If the battery does not recover and start giving satisfactory cycle time, then it should be replaced. The sooner you catch the batteries losing capacity, the more likely an extended charge time will restore the battery to normal capacity. If the battery discharge time is only three or four hours, it is unlikely that extended charge time will help significantly.

Additional information

Any sensor that is powered up after being off for a while will initially indicate 100% capacity on the aligner screen. This is not an accurate indication of the charge state of the battery. The battery has a surface charge which dissipates quickly. Within 5 minutes of operation the on-screen battery level indicator will settle at its true value. The individual wheels on the screen indicate the actual battery condition and are color-coded. The following is an indication of battery charging condition:

- Green = fully charged or partially charged
- Yellow = approximately 20% charge left
- Red (with battery recharging icon) = requires charging



The charging circuit has been fine tuned to work specifically with Hunter batteries, part number 194-23-2 (Powersonic part number PS-1223). Substituting different batteries is not recommended.

A sensor that is being used, and has a low battery, can retain its measurement data if a hot swap battery replacement is made. Hot swapping the battery requires that the user replaces the battery, and then tilts the sensor completely forward, then completely backward. The sensor settings will be restored and the alignment can proceed.



8.1.6. Charging the Wireless Remote Indicator Battery



NOTICE

A battery, 194-23-2, is required for wireless operation. The wireless remote indicator uses the same battery as wireless DSP500 Sensors.

The wireless remote indicator contains a 12VDC sealed lead acid rechargeable battery. To get the maximum life out of the battery, follow these three rules: If the wireless remote indicator is not in use, charge it.

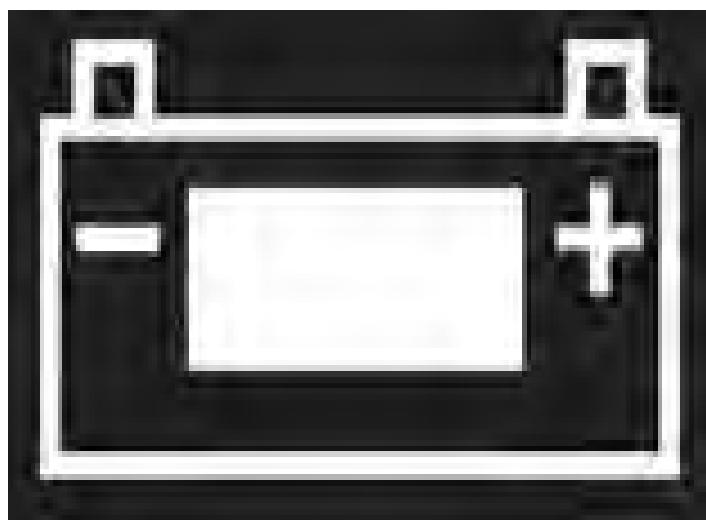
Switch the wireless remote indicator OFF during charging.

Charge for eleven to thirteen hours, and/or provide an extended charge time (24 hours or longer) at least once a week.

To prevent premature degradation of battery performance, the charger has to replace 125% of the energy that was removed from the battery. It is not necessary to fully discharge the batteries before charging. However, it is important they be fully charged.

Battery Indicator

The battery indicator is located on the face of the remote.



The amount of charge in the battery corresponds to the amount of green LEDs illuminated within the battery.

Charging information



NOTICE

The battery can also be removed from the remote indicator and charged in a cabinet-mounted or table-top battery charger.

To recharge the batteries within the remote indicator, either connect to the Aligner cabinet with a Burndy cable or hang the unit from the remote indicator charger.



NOTICE

The outlet supplying power to the aligner or external charger needs left on.

The main power switch at the rear of the console needs left on when the remote indicator or external charger is connected to the Burndy to charge the battery.

R and P cabinets are equipped with a standby power switch located on the front or side of cabinet. Power is still provided to the Burndy connectors when in standby mode. Leave the main aligner power on. The two contacts on backside match the (neg) terminal, and the + (pos) terminal on the charging station. Batteries that are consistently subjected to partial charging rather than full charge cycles will permanently lose capacity.

Charging time for a fully discharged battery with the power switch turned off is 11 to 13 hours. A longer charging time would be required if the remote indicator is left on during the charge cycle. It is important that the remote indicator be turned off during dedicated charging times (such as overnight). The wireless remote indicators power switch is located below the Burndy connector. Charging overnight with the wireless remote indicators power switch set to Off will provide a proper charge. Our charging system cannot over-charge the batteries. If you're not using the wireless remote indicator charge it!

Charge indicator

Any time the battery is being charged within the remote indicator, the indicator located below the Burndy connector is illuminated. The charge indicator light is red when in fast charge mode.

The charge indicator light turning from red to yellow is an indication that the charging mode has switched from a fast charge mode into a trickle charge mode. It does not mean that the battery is 100% charged. A fully discharged battery should be allowed to trickle charge a minimum of five hours to ensure a full charge.

The charge indicator light turns green after approximately 6-8 hours of trickle, indicating the charger has entered float mode, which maintains the battery at full charge indefinitely.

In a shop with extended service hours, there are some things you can do to prolong battery life:

When the remote indicator is not being used to perform alignments, it should be stored on the charging hangers with power switched off. At a minimum, turn the remote indicator off between alignments. Any charging accomplished throughout the day helps maintain the battery at peak performance, and helps extend its life.

If you have one day out of the week when alignments are not performed, you can let the remote indicator charge continuously for 24 hours or longer. This should undo the effects of any undercharging that occurred during the previous week. This sort of prolonged charging will only

be effective at restoring full capacity to the batteries if performed regularly. The recommended minimum is once a week.

When is it time to replace the batteries?

If after a full charge the battery does not last for the expected 8 hours, you should put it through one or two sessions of extended charge time (24 hours or longer). If the battery does not recover and start giving satisfactory cycle time, then it should be replaced. The sooner you catch the batteries losing capacity, the more likely an extended charge time will restore the battery to normal capacity. If the battery discharge time is only three or four hours, it is unlikely that extended charge time will help significantly.

Additional information

The charging circuit has been designed to work specifically with Hunter batteries, part number 194-23-2 (Poweronic part number PS-1223). Substituting different batteries is not recommended.



8.2. Camera Based and Ride Height Targets Care and Maintenance

Camera Based series sensors contain no electronic components. These sensors are referred to as Targets®.

8.2.1. Target Maintenance

Keeping the Camera Based Targets® clean is the only required maintenance. Noticeable dirt build-up, oil or grease can cause target identification problems. In the sensor status pop-up screen, either of the two icons (shown below) identifies sensors that possibly need cleaning. The text would appear with the icon above the plan view.

■ (red) Target not found.

■ (black) Target is found by camera, but not measured.

When cleaning, use a mild window cleaning solution and soft paper towels to wipe off the Targets® and wheel adaptors. Do NOT spray cleaner directly on the target.



WARNING

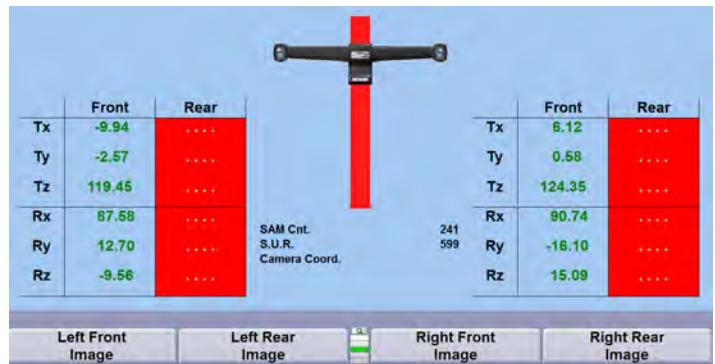
Do not hose down or submerge the Targets® in water. This could damage the optical components.

Do NOT use shop towels to clean Targets®, not even new ones.

Keep wheel adaptor rods cleaned and lubricated. Lubricate as needed with a coating of light lubricant such as WD-40.

8.2.2. Target Image Viewer

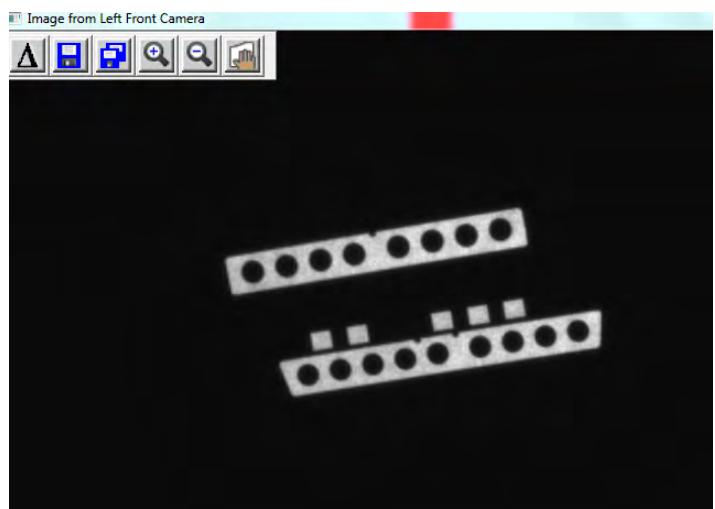
If the aligner begins to show inconsistent results or is having difficulty identifying the Targets®, the image viewer can be used. From the home screen, press the help key and navigate to the bottom row. Select "sensor diagnostics" from the list. A screen like the one below should appear.



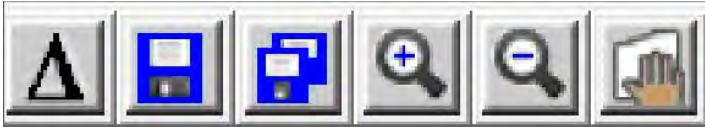
If the Targets® are within the visible range of the cameras, their corresponding location will appear on screen.

The numbers displayed on screen show the location of the Targets®. If they change, this means the Targets® or sensors are moving. If the movement becomes excessive, the color will change from green to yellow.

Pressing the "left front image" key from the list on the screen will display an image of the left front target from the camera's perspective. The white areas show the visible areas of the target to the camera.

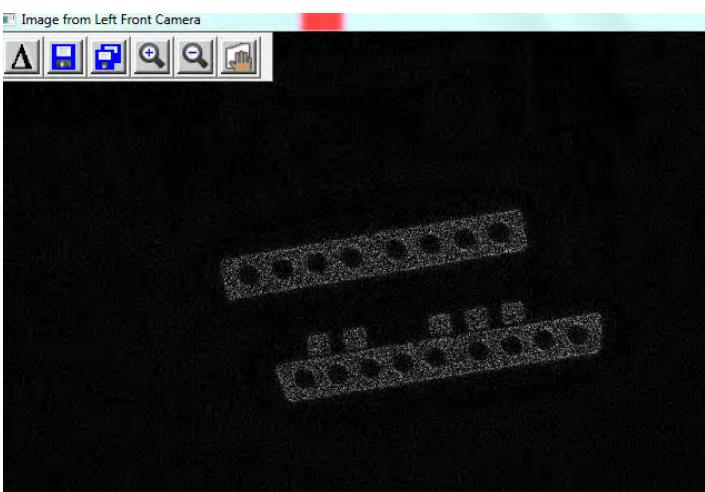


The following button at the top left corner of the screen are:

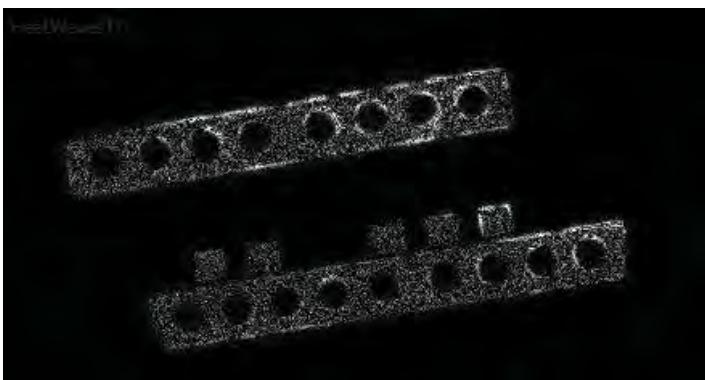


- Difference
- Save screen data
- Data dump
- Zoom In
- Zoom Out
- Target Cleanliness

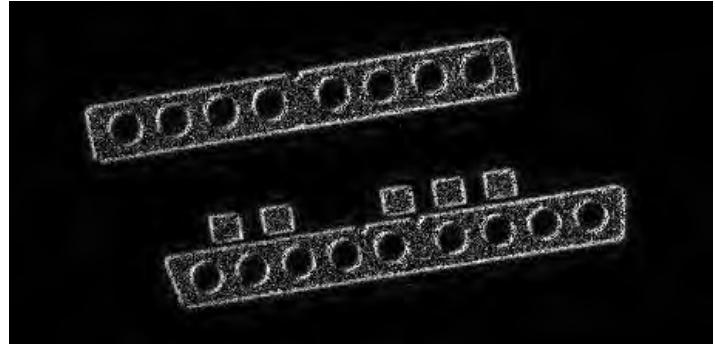
The left difference button will display the amount of interference being caused by factors such as heat, and vibrations. The greater the interference the more pixelated the target will appear. Targets® under normal conditions will have a uniform coloration.



Air turbulence from HVAC systems or opening and closing garage doors can cause heat waves that distort the image. As the heat moves across the Targets®, the distorted sections will appear highlighted as seen in the image below.



Excessive vibrations will appear as a highlighted outline on the image as seen below.



A screenshot of the image can be taken using the save screen data button.

The target cleanliness button will illustrate areas on the target that the camera is having difficulty detecting.

A grey flashing circle will appear over areas of the target that the camera cannot see properly. Use approved cleaning products to clear the grease or dirt. If successful the grey circle will disappear.



8.2.3. Care and Cleaning of the Targets

CAMERA MAINTENANCE

Keep hands and tools away from the camera lens area.

DO NOT attempt to clean the camera lens with standard window cleaner and a cloth, or by blowing on them with shop air. If cleaning ever becomes necessary, it should be done with special optical cleaning fluid (such as lens cleaner available at camera stores) and/or canned air (available at computer stores).

Other than cleaning, all maintenance of the camera should be referred to an authorized Hunter Service Representative.

When cleaning, use a mild window cleaning solution to wipe off the Targets® and wheel adaptors.



WARNING

Do not hose down or submerge the Targets® in water, or spray cleaner directly on the target. This could damage the optical components.

Do NOT use shop towels to clean Targets®, not even new ones. Keep wheel adaptor rods cleaned and lubricated. Lubricate as needed with a coating of light lubricant such as WD-40.



WARNING

Do not lubricate the center screw shaft of the wheel adaptor. If the adaptors are lubricated they should be careful to avoid lubricating the center screw shaft.

8.2.4. Ride Height Target Maintenance

8.2.5. Dirty Targets can Hinder Sensor Performance

The ride height Targets® incorporate a precision pattern that is analyzed by camera software to determine the location and orientation of the Targets® on the vehicle. It is apparent that the Targets® will get dirty with daily use and the software is tolerant to a reasonable amount of pattern obstruction. When the dirt build up gets severe enough, the software will reject the target and declare it not found.

Cleaning the target will restore proper functionality. Cleaning the Targets®, as described below, should be the first step in troubleshooting any ride height target acquisition problem.



WARNING

Keeping the Targets® clean will ensure the best accuracy.

8.2.6. Target Face Cleaning Instructions



NOTICE

Use of shop towels or rags is not recommended as the fibers trap grease which will be deposited back on the target in a thin film as wiping continues.

Armor All® Glass Wipes is the preferred cleaning product, chosen for the film-free results after the cleaning solution evaporates.

Completely wipe the entire face of target.

With an unused portion of the wipe (such as the opposite side), completely wipe the face a second time.

The target is ready for use in 30 to 60 seconds, after the cleaning solution completely evaporates.



NOTICE

If Targets® are heavily soiled or greasy, use an all-purpose cleaner. With the spray cleaners, spray the cleaner on a quality paper towel and then wipe the target

All-purpose cleaners can leave a slight film on the target surface that could hinder target recognition. Follow the removal of heavy soil and grease with Armor All® Glass Wipes, as described above.

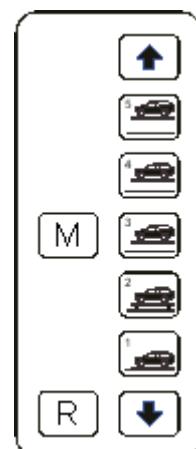
8.2.7. Target Mounting Surface Cleaning Instructions

Use Goo Gone® or similar product to remove built-up adhesive. DO NOT scrape adhesive off the mounting surface.

8.2.8. DSP600L Vertical Lift Control Unit

The system control unit is located on the front of sensor leg. The control unit plugs into a 115V wall outlet and provides electrical power to the processor and the drive motor. The drive motor, sensor, and the safety switches connect to the control unit.

The front of the control unit contains a membrane keypad for controlling beam movement. The membrane keypad is shown below:



Operation

The toggle switch turns the power ON and OFF.

The up or down arrow keys move the beam up or down, respectively. The beam moves only while the key is depressed and can be positioned at any height by using these keys.

The warning beeper repeatedly sounds as long as the beam is moving. This alerts anyone nearby that the beam is in motion.

Preset Keys

The keys between the up and down arrow keys allow the beam to be positioned at preset heights. To set a preset key, do the following:

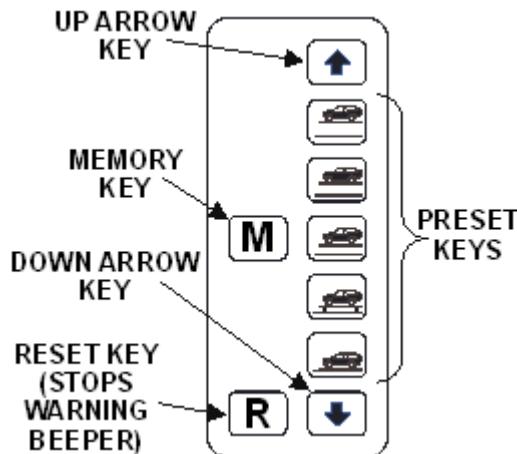
Use the up and down keys to move the beam to the desired height.

Press and hold the M (memory) key.

Press the desired preset key.

Listen for three quick beeps. This confirms that the height setting has been stored in memory.

Release the keys.



To use a preset key, simply press and release it. The cameras move to the height preset for that key. If a height has not been set for a preset key, the beeper sounds for about a half second and the beam remains stationary.

The preset keys would normally be set for the following heights: The top key is maximum height. The bottom key is minimum height.

The next to the bottom key is normal alignment height.

The remaining two keys can be set to other desired working heights.

All the stored heights can be removed by holding the reset key while the power is turned off.

Safety Switches

The safety switches monitor the travel of the crossbeam. The safety switch is activated when the crossbeam is raised by means other than the mechanical lift (such as a stationary object impeding the lowering movement of a crossbeam).

If the crossbeam is moving and the safety switches actuate, crossbeam movement stops and the warning beeper sounds continuously. The beeping is intended to summon help, if the crossbeam movement is blocked. The beeping continues until acknowledged.

Press the R (reset) key on the control panel to stop the beeping.

8.2.9. DSP600LP Lift Controls

The control lever is located on the front of the sensor leg. The lever controls the flow of compressed air (80-120 psi.) into the pneumatic cylinder that raises and lowers the cameras.

DSP600LP-Lift Partial-Sensors have two camera positions. There are no camera stops between the bottom and the top position.

Operation

Position the lever in the lower position to place cameras in the bottom position.

Position the lever in the upper position to place cameras in the top position.

8.2.10. Movable Cameras



WARNING

Before operating the Camera Lift, ensure there are no obstacles above or below the Camera Lift cross bar.

Basic Operation

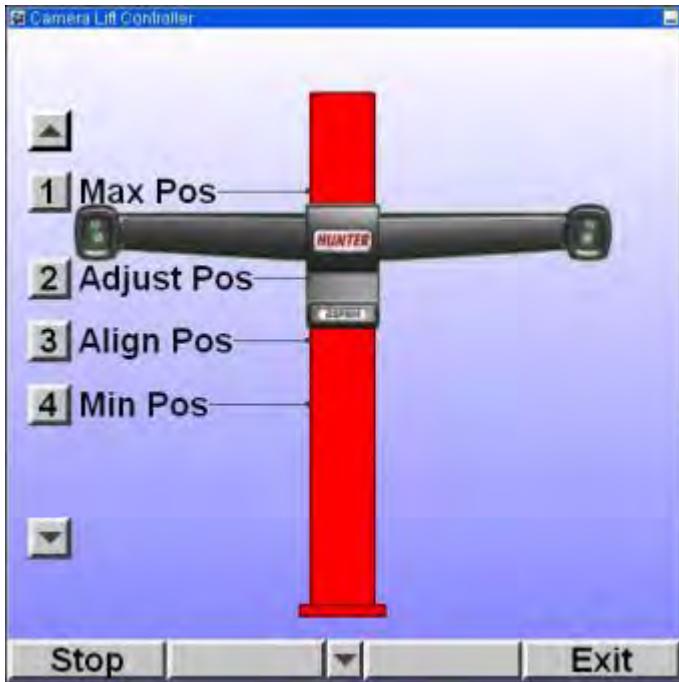
When the Camera Lift system has been installed, the Camera Lift icon appears in the lower right portion of the screen below the procedure bar.



There are three modes of operation: Manual, Target Tracking, Rack Tracking (FIA Only).

Manual

Double clicking the icon with the left mouse button causes the Camera Lift Pop-up Screen to appear.



To drive the Camera Lift, press one of the 4 preset buttons with the left mouse button or the keyboard number keys 1, 2, 3 and 4. The Camera Lift will move to the predefined positions indicated by the black lines.

Alternately, the user can press and hold down the up or down arrow key using the left mouse button or the keyboard arrow keys. This drives the Camera Lift in the desired direction until the key is released.

At any time, the "Stop" button can be pressed to terminate the Camera Lift movement of the preset buttons.

There are 3 ways to remove the Camera Lift Screen:

- Pressing the "Exit" button.
- Double clicking on the Camera Lift icon.
- Allowing the screen to "time out" after a preset position has been reached.

When ever the user presses the preset buttons, the screen will automatically be removed several seconds after the position has been reached unless the operator presses another key on the Camera Lift Screen.

Target Tracking

When Target Tracking is enabled, the Camera Lift icon with a small target appears in the lower right portion of the screen below the procedure bar.



The camera lift will automatically go to a predefined compensation height when the alignment procedure is

on the compensation screen. On subsequent screens, the camera lift will move up or down as the rack is adjusted and the Targets® get near the limits of the camera's view. Upper and lower tracking limits can be programmed to limit unnecessary travel.

At any time the operator can manually control the camera lift as described in the "Manual" section above. Target Tracking resumes once the Camera Lift screen is exited.

Rack Tracking (FIA Only)

When Rack Tracking is enabled, the Camera Lift icon with a small runway image appears in the lower right portion of the screen below the procedure bar. A FIA equipped rack must be installed for this feature.



In this mode the camera lift will track the height of the rack as the rack is raised or lowered. Upper and lower tracking limits can be programmed to limit unnecessary travel. At any time the operator can manually control the camera lift as described in the "Manual" section above. Rack Tracking resumes once the Camera Lift screen is exited.

8.2.11. Customizing & Setup

Refer to Refer to ["RackTrack™ Movable Camera Selection," \[192\]](#) for detailed instructions.

8.3. Remote Indicator

8.3.1. LED

The LED Remote Indicator allows the technician to be mobile in the bay while making adjustments to the vehicle. The Operation Instructions for the Remote Indicator is [Form 3857T](#).

8.3.2. Remote Indicator Models 30-418-1, 30-419-1, and 30-421-1

The Remote Indicator allows the technician to be mobile in the bay while taking measurements and making adjustments to the vehicle. The Operation Instructions for the Remote Indicator is [Form 5382T](#).

8.4. Digital-PHOTO Option

The optional DVD-ROM displays digital photos of adjustment and inspection points for the specific vehicle being aligned. The Digital-PHOTO system uses a new database of information that includes the translations of all of the text on all of the adjustment photos and line art. Therefore, it is possible to see the adjustment illustrations in any language. Many options are included in the Digital-PHOTO features that can be found in the Illustrating Vehicle Adjustments section of this manual.

8.5. CD/DVD-ROM Handling Instructions

Handle the disk only by its edge.

Do not touch the surface of the disk.



Do not drop the disk. Do not scratch the disk.

8.5.1. Replacing the CD/DVD-ROM in Systems That Have Tray Type Players

Press the eject button on the CD/DVD-ROM drive to open the CD/DVD-ROM door.



NOTICE

Ensure that the tray is vacant before placing a CD/DVD-ROM in the CD/DVD-ROM drive.

Place the CD/DVD-ROM in the tray with the printed surface side up.

Press the eject button again to close the CD/DVD-ROM player door.

8.6. Mouse

A mouse is the standard pointing device used with all aligners.

A flat surface is needed to operate the mouse efficiently. Use Mouse Pad Kit, 20-1434-1, The driver for the mouse is installed at the factory. A light pen and a mouse may both be installed and used.

8.7. WinAlign Backup/Restore

The WinAlign® Multi-disk Backup/Restore procedure saves files modified by WinAlign® to any selected directory. The saved files can be restored later by using the restore procedure.



NOTICE

The restore procedure does not install the WinAlign® software.

WinAlign® modifies files when any of the following occur: setup is changed, a vehicle specification is stored, a vehicle

specification note is stored, the logon registry is changed, a work order is stored, a form letter is stored or a filter is stored.

Backup should be performed on a regular basis. How often backup is performed depends on what features of WinAlign® are used. The following backup schedules are suggested:

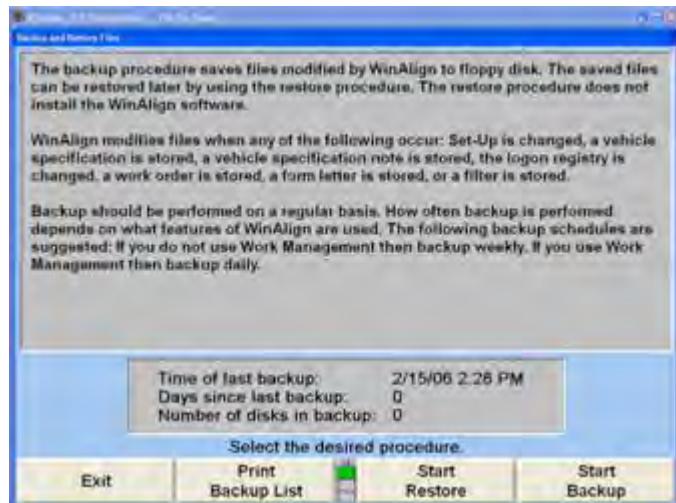
- If you do not use Work Management then back up weekly.
- If you use Work Management, then back up daily.

8.7.1. Backup and Restore Procedures

To access the Backup/Restore utility, press "Service Programs" on the logo screen. The menu labels will change.

Press "Backup and Restore" from the "Service Programs" softkey menu.

The "Backup and Restore" screen presents initial information about WinAlign® backup. It also displays the time of the last backup, the number of days since the previous backup, and the number of disk(s) in the most recent backup set.



8.7.2. Backup Procedure



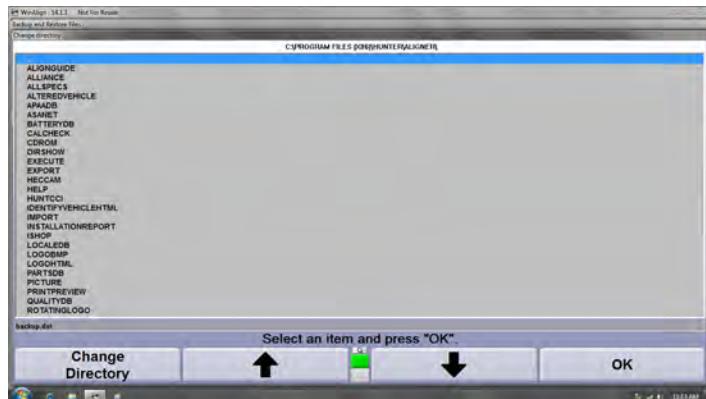
WARNING

If the machine is reset, or the backup procedure is canceled at anytime during the back up procedure, WinAlign® deletes the backup file and the backup is invalid. It is strongly recommended that Cancel or Reset is not used during the procedure.

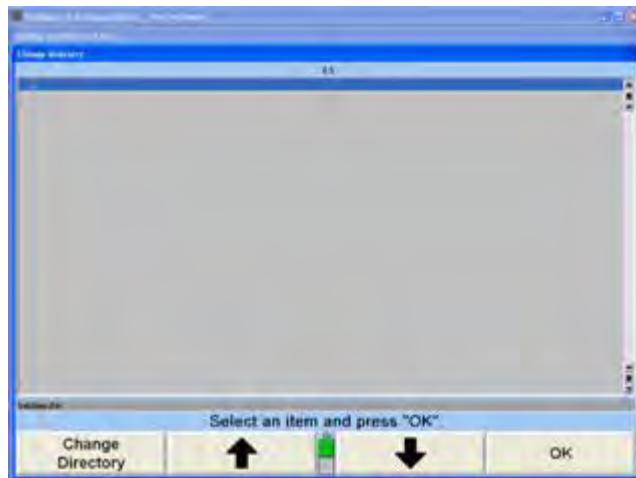
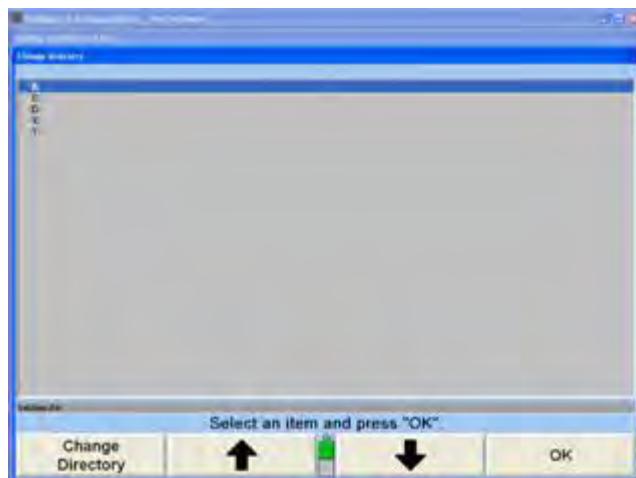
Select "Start Backup". The program defaults to installing on the hard drive in C:\ProgramData\Hunter\BACKUP.DAT.

Backup files are successively numbered as backups are performed.

Select "Change Directory" to install the backup in a different location. Double click on a location to expand it. When finished, select "OK" to begin the backup.



Double-click on the directory to install the backup.



WinAlign® will check the media for formatting, write-protection, and the existence of previous back up data. If the media contains an earlier backup, WinAlign® will inform the user that the disk contains data, and asks for confirmation to overwrite the information. Select "OK" to proceed with the backup.



WARNING

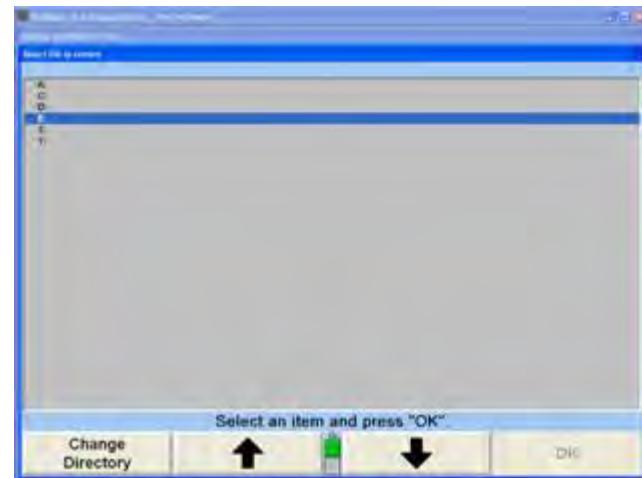
If the media contains the latest backup prior to the one being performed, it is not recommended to overwrite the disk. Select NO. WinAlign® will prompt to insert another removable media. Insert a drive, and begin backup process again.

After WinAlign® completes the backup procedure, the user will be prompted that backup was successfully completed. Select "OK" and exit backup program. Label the USB drive as "WinAlign® Backup" followed by the current date and time.

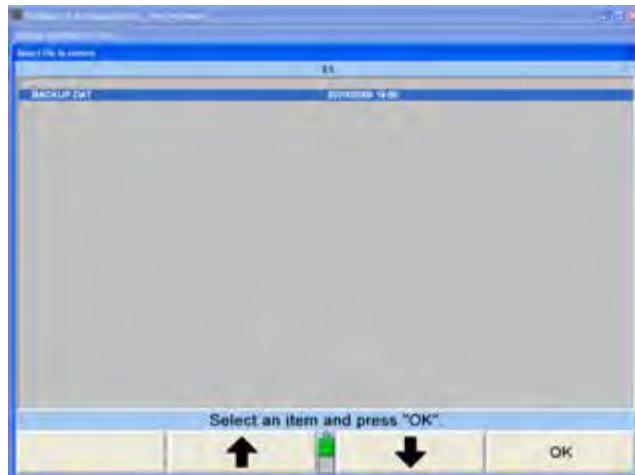
8.7.3. Restore Procedure

Begin the restore procedure by selecting "Start Restore" on the "Backup and Restore Files" screen.

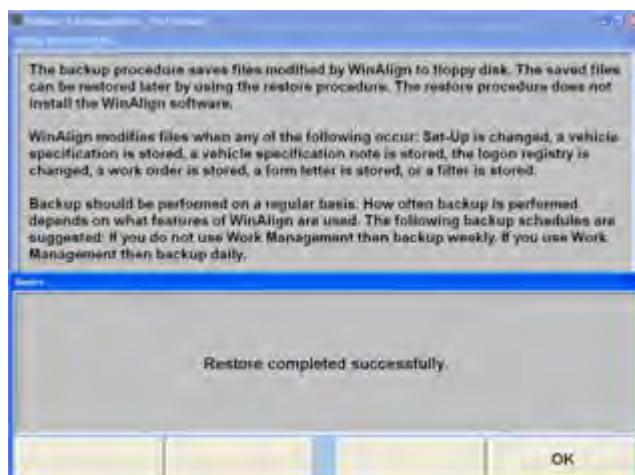
Insert the backup USB drive and or select the correct backup directory, WinAlign® will verify that the information can be read and that it is a valid backup.



Insert removable media into the appropriate drive, or select "C:" to install on the aligner hard drive.



Select "OK" when the Restore completed successfully screen appears, and exit the restore program.



8.8. Electronic Keys

Included with the software are one or more electronic keys that look similar to large watch batteries. These keys are needed to run the WinAlign® program. If WinAlign® is loaded onto a PC without the proper keys being inserted in the Hunter Interface Board, an error message will appear, similar to the one shown below.



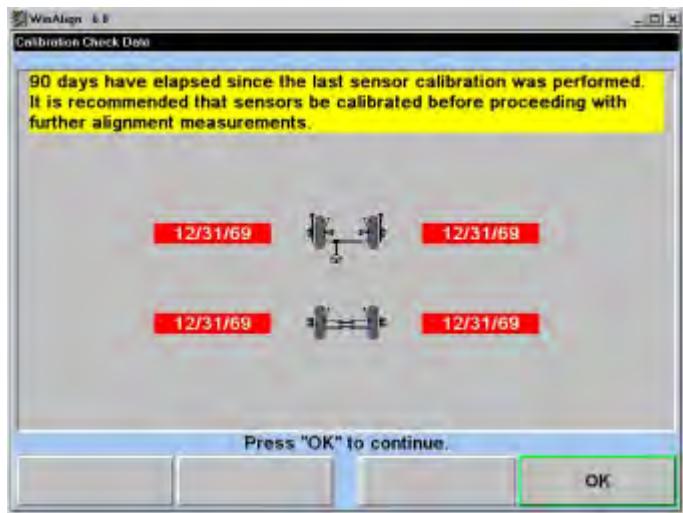
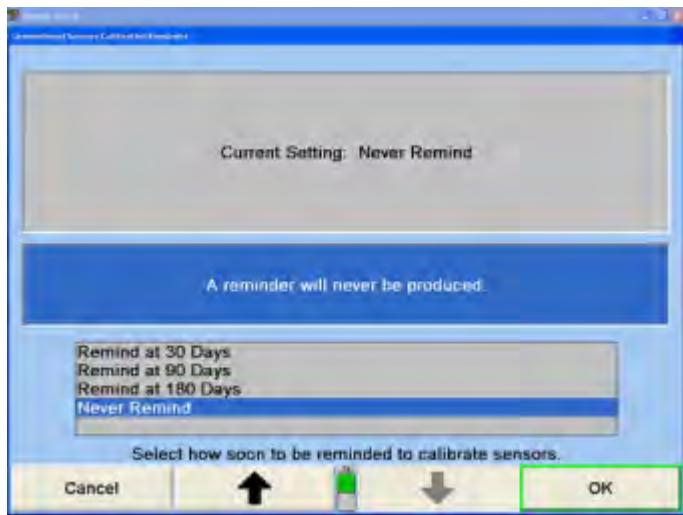
Electronic keys can be placed in any of the available sockets on the Hunter Interconnect Board and/or the electronic key holder. It does not matter which key is in which socket.

A red key is always required to run WinAlign®. A green key is required to access the Factory Specification Database. If the aligner has a CD-ROM an orange key is required to use the WinAlign® features which access the CD-ROM, such as the digital photos (adjustment illustrations) or the MPEG video segments.

WinAlign® will NOT operate properly if the required electronic keys are not installed! Additional keys can be used to allow access to other features within WinAlign®. An additional orange key provides access to Digital-VIDEO and Digital-PHOTO. A yellow key provides access to features that meet the needs of certain national accounts.

8.9. Conventional Sensor Calibration

A calibration reminder can be enabled in Set up to notify the user at specified intervals to calibrate the sensors.



The reminder can be set for every 90 days, every 180 days, or never. It is recommended to perform calibration at least every six months.

8.9.1. Calibration General Information

Calibration must be completed prior to operation of the sensors. Failure to successfully complete the calibration procedure will inhibit all of the alignment functions of the system.

The calibration data for the sensors is stored in the sensors. Replacing the transducer control circuit board in a sensor will require the sensor to be re-calibrated. Sensors are calibrated in sets and should be kept in sets so that unnecessary re-calibration is not required. If, however, the front or rear sensors of one set are used with the front or rear sensors of another set, Zero Only calibration must be performed on the new set.

A calibrated set DSP700 Series series sensors can be used with any aligner using WinAlign® software. The calibration procedures must be followed carefully. An accurate calibration will not be obtained if procedure performance is rushed.

The information in this section is applicable to all 506, 508 and 700 Series Sensors unless otherwise indicated.

8.9.2. Mounting DSP Sensors

Remove the sensors from the wheel adaptors.

Carefully slide the shafts of the left and right front sensors into their respective calibration shaft hubs in the front calibration shaft. (The front of the calibration fixture is indicated by arrows painted on the baseplate.) Carefully slide the shafts of the left and right rear sensors into their respective calibration shaft hubs in the rear calibration shaft.



NOTICE

To prevent the calibration fixture from tipping over after mounting the first sensor, mount the second sensor on the opposite side of the calibration fixture.



NOTICE

The sensor shafts must be fully inserted into the shaft hubs. The hex-shaped shoulder of the sensor shaft must contact the flat face end of the calibration shaft.

Connect the sensors to the console using the sensor cables, as shown below.

8.9.3. Leveling the Calibration Fixture

Unscrew the RED and BLACK screws in the baseplate so that the fixture is resting on only the three SILVER leveling screws. One silver screw is located at the front of the fixture and two at the rear of the fixture.

Position the level left-to-right on top of the rear calibration shaft. To verify the level is accurate, refer to the Calibration Fixture Adjustments for procedures to check the level assembly.

If necessary, adjust the two setscrews in the aluminum casting on either side of the level so that the level is held vertical.

Adjust the two rear SILVER leveling screws until the rear calibration shaft is level left-to-right. Recheck by reversing the level assembly on the shaft.

Position the level front-to-rear on the top of the two flats at the center of the aluminum casting.

Adjust the single SILVER leveling screw at the front of the fixture until the calibration fixture is level front-to-rear.

Recheck by reversing the level assembly on the aluminum top casting. Recheck the left-to-right and front-to-rear level of the fixture, and make adjustments as necessary.

Position the level assembly left-to-right on the top of the front calibration shaft to check it for level. The front calibration shaft should be level. If necessary, refer to the Calibration Fixture Adjustments for procedures to re-level the top casting.



NOTICE

Both front and rear calibration shafts must be level and the fixture must not rock.

Screw down the two front RED screws (in the fixture baseplate) to meet the table surface. The fixture should now be resting solidly on five leveling screws (two RED and one SILVER at the front, and two SILVER at the rear).

Observe the sensor level while leveling the sensor. Adjust the sensors until the bubble is centered in the level. Tighten the sensor lock knob.

8.9.4. Starting the Calibration Procedure

Turn on the system. Verify the logo screen is displayed.

Press the menu shift key, , until the "Service Programs" softkey is displayed.

Press the "Service Programs" softkey.

Press the "Calibrate Aligner" softkey.

8.9.5. Procedure Basics

The screen will guide the user through the calibration steps. At the beginning, you will answer questions about what is to be calibrated, after which the program will follow the appropriate procedure based upon your response.

Pressing "Backup" during the calibration procedure will display the previous step. If desired, you may backup all the way to the beginning of the calibration procedure.

To illustrate what is desired at each step, the screen will show a plan view of the sensors mounted on the calibration fixture. When the procedure calls for an operation to be performed on the sensors, the graphics on the screen will clearly illustrate what is required.

After you have done what the screen requires, press the "Ready" softkey. The aligner will instruct the sensors to save certain information from the transducers. The sensors will wait until the required transducers have valid and stable data, and then save it. While the sensors are waiting for the data to stabilize, you will be instructed to wait. You

can abort this waiting by pressing "Pause", at which time the screen will require you to repeat the step.

On some steps of the procedure, the sensor software will use the data that has been saved to compute and check a calibration coefficient. If the new coefficient is in error, the screen will show which transducer has the error and what the error is; either a procedure error, or an improperly mounted or malfunctioning transducer.

If a calibration error is shown, you have the options of pressing "Backup" and repeating the step, pressing "Continue" and ignoring the error, or pressing "HELP", then , and then "Sensor Diagnostics", which pops up the "Sensor Diagnostics" screen.

The "Sensor Diagnostics" screens function exactly as they do for the alignment operating software. If you press "Continue", you will be returned to the step you were on in the calibration procedure when you pressed "Sensor Diagnostics". You may go to the "Sensor Diagnostics" screen at any time to view the intermediate results of the calibration procedure or to diagnose a problem.



NOTICE

When the sensors are mounted on the calibration shafts, the weight of the sensors causes the shafts to bend downward slightly. When the camber transducers are zero adjusted, their measurements are offset from zero by the amount of this droop, and so a small offset equal to this droop is applied to the zero calibration coefficient.

This means that the camber transducers should not measure zero when mounted on the calibration fixture and shown on the diagnostics screens. If the compensated angles are shown, the camber transducers should directly measure the droop. Because the different sensor types have different weights, the offset varies as well. The displayed compensated camber angle should correspond to the following chart.



NOTICE

Power must not be removed from the sensors during the calibration procedure. If a sensor loses power, the data saved during intermediate steps will be lost. The screen will inform you that this has occurred, and will automatically restart the procedure.

8.9.6. Selecting What to Calibrate

The camber/caster adjust transducers of the DSP Series Sensors are designed so that it is unlikely the range calibration will change. Do NOT perform a Full Calibration on any transducer unless that transducer or sensor circuit board has been adjusted or replaced. If it is necessary to range calibrate a transducer, range calibrate only that transducer.

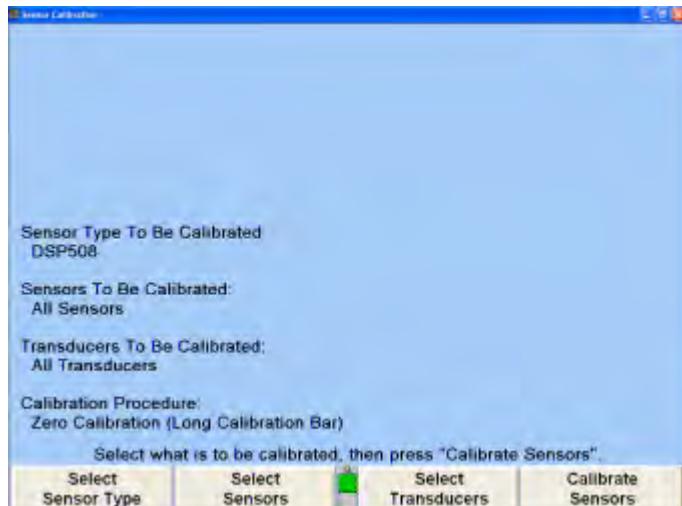
Toe transducers are range calibrated every time a zero calibration is performed.



IMPORTANT

When calibrating DSP Series Sensors, if one transducer is replaced or adjusted, the opposite (left or right) transducer must be calibrated also.

The calibration primary screen shows what is to be calibrated.



Changing the calibration selections: Press "Select Sensor Type" to pop up a screen to select the sensor type to be calibrated.

Press "Select Sensors" to pop up a screen to select which sensors are to be calibrated. Press "Select Transducers" to pop up a screen to select which transducers are to be calibrated.

Press "Select Procedure" to pop up a screen to select either a "Full Calibration" or "Zero Calibration" procedure.

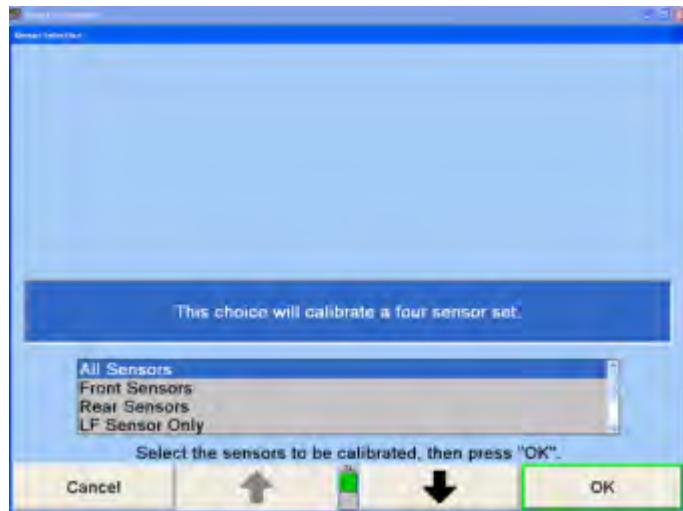
These four pop-up screens operate in the same manner. The screen pops up to show the following: The title of the screen shows what is to be selected.

The possible selections are listed in a box at the bottom of the screen.

The current selection is highlighted in the box.

An explanation of the current selection is shown in the center of the screen.

For example, the "Sensor Selection" pop-up screen appears as follows:



To change the selection, press ↑ or ↓ as needed to highlight the desired selection, then press "OK".

Example:

The longitudinal toe transducer in the left front sensor has been replaced. Calibrate only that transducer by making the following selections: Select DSP sensors.

Select LF only. Select longitudinal toe only. Select range and zero.

Follow the instructions.

Example:

The right rear transducer control board has been replaced. Calibrate all transducers in that sensor by making the following selections: Select DSP sensors.

Select RR only.

Select all transducers. Select range and zero.

Follow the instructions.

8.9.7. Performing the Calibration (Conventional Sensors)

Based on the selected sensors, transducers and procedure, the screen will prompt you through the necessary steps of the calibration process.

Press "Calibrate Sensors" to begin the procedure. The screen pops up with instructions to mount the sensors on the calibration fixture, as shown:



The screen shows the status of each sensor and of each transducer. Go to the "Sensor Diagnostics" screen to verify that the transducers function properly and that the boresight readings are within limits.

Press "Ready" when the sensors are ready to calibrate. The system will wait until the necessary transducer readings are stable, and then will capture the first readings.



WARNING

Do not rush the calibration process. The more patient and careful you are, the better the calibration will be.

The screen will prompt you, step-by-step, through the remaining steps of the procedure, which include some combination of mounting prisms, tilting the fixture with spacers, compensating the sensors for runout, and leveling the sensors for zero calibration. The actual steps to be performed will vary, depending on which sensors and transducers are to be calibrated.



NOTICE

At any time during the calibration procedure, the Sensor Diagnostics screen may be viewed by pressing the softkey labeled "HELP", then the menu shift key, , and then "Sensor Diagnostics". From the Sensor Diagnostics screen, Sensor Data or Transducer Data screens may be viewed. Pressing "OK" will return the screen to the same point in the calibration procedure.

8.9.8. Mounting Spacers for Camber and Caster Adjust Transducers (All Sensors)

Follow the instructions displayed on the screen and press "Ready" after each step.

If an error is made during the calibration, pressing "Backup" can redo the step. Repeat the step and continue the procedure.

When the screen prompts for spacers to be installed under the side of the fixture, lift the fixture using the BLACK screw at the middle of the indicated side. Position one of the thinner spacers under the RED leveling screw at the front and one under the SILVER leveling screw at the rear. Lower the fixture onto the two thin spacers.

When the screen prompts for spacers to be installed under the front of the fixture, lift the fixture using the BLACK screw at the front. Position one of the thicker spacers under each RED leveling screw at the front of the fixture. Lower the fixture onto the thick spacers.

8.9.9. Zero Calibration



WARNING

Perform this step slowly and carefully. The most critical calibration of an alignment sensor is Zero Calibration.

After compensating for runout, when the screen prompts, remove all prisms and spacers.

Verify that the sensors are in the position that will be called ZERO.

Verify that all spacers and prisms are removed, and then recheck the levelness of the calibration fixture and the sensors.

Press "Ready".

8.9.10. Storing Calibration Results

When the screen prompts that it is ready to store calibration, press "Ready". The new calibration data will be stored in the sensors, and the old calibration data will be deleted.



NOTICE

The calibration results may be stored, even if the calibration procedure resulted in errors. For example, if only one transducer indicated an error, the results of the entire procedure could be stored, that one problem corrected, and then re-calibrate only that transducer.



WARNING

The sensor shafts must be fully inserted into the calibration shaft hubs. The hex-shaped shoulder of the sensor shaft must contact the flat face end of the calibration fixture shaft. The toe arms should rest on the top of the round cams at the each end of the toe arm rest.

8.9.11. Finishing Calibration

When the calibration process is complete, do the following:

Remove the sensors from the calibration fixture and remount them on the wheel adaptors.

Remove the calibration shafts from the calibration fixture and place them in the compartment in the fixture base.

Store the fixture in a dry location.

8.9.12. Calibration Fixture Adjustments

Verify that the level assembly is calibrated by placing it on a reasonably level, flat surface, noting the position of the bubble.

Rotate the level assembly 180 degrees. If the bubble is floating to the right or left of center for example, then rotating the level assembly 180 degrees should also show the bubble floating in the same direction. This verifies that the level is calibrated correctly and is indicating an out of level surface.

If the level is not in the same position after rotating the level assembly 180 degrees, remove the cover to gain access to the level mounting screws. Adjust one screw only to position the bubble to a point midway between the first and second position.

Repeat the operation and adjustment if required.

After level calibration, replace the cover.

8.9.13. Mounting the Sensors on the Calibration Fixture

Carefully slide the shafts of the front sensors into their respective calibration shaft hubs at the front of the calibration fixture. The calibration fixture has arrows painted on the baseplate, which indicate the front of the fixture.

Carefully slide the shafts of the rear sensors into their respective calibration shaft hubs at the rear of the calibration fixture.



WARNING

Finger tighten the thumbscrews on all four calibration shaft hubs to hold the sensors in place.



WARNING

The thumbscrews must be finger tightened only. Do NOT use a wrench. Verify there is no play between the sensor shaft and the calibration shaft.

Level the fixture as described in Leveling the Top Casting.

Rotate the toe arm rest bar cams until they support the front sensor toe arms in the level position. A small weight (one or two ounces) should be placed on the top of each toe arm to hold it against the support. Tighten the 1/4 inch hex head screws that hold the cams in place.

Adjust the cartridge level located on top of the toe arm rest bar to read level when the fixture is leveled.

8.9.14. Leveling the Top Casting

It is possible for the top casting to be incorrectly mounted to the baseplate so that the adjustment screws cannot compensate for the misalignment. If either of the calibration shafts cannot be leveled, this is an indication that the casting is mounted incorrectly. When this condition is present in your calibration fixture, adjustment of the hex nuts and studs that mount the casting will be necessary.

Position the level assembly left-to-right on the front calibration shaft and verify level. Make the necessary corrections by adjusting the front 3/8 inch hex nuts that are located above and below the aluminum top casting on the studs that mount the casting to the base assembly. Re-check level by reversing the level assembly on the shaft.

Repeat the previous step on the rear calibration shaft.

Position the level front-to-rear on top of the two flats at the center of the aluminum casting and verify level. Make the

necessary corrections by adjusting the 3/8 inch hex nuts that are located above and below the aluminum top casting on the studs that mount the casting to the base assembly.

Tighten all locking nuts securing the assembly.

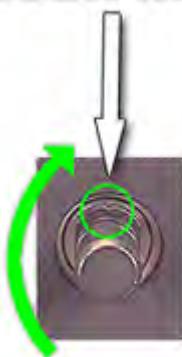
Re-check to verify that the casting left-to-right, and front-to-rear are still level.

8.9.15. Zero Calibration Using the Long Calibration Bar

8.9.16. DSP Sensor Preparation

Remove the sensors from the wheel adaptors. Rotate the sensor shaft so the index mark is in the 12 o'clock position. Lock the shaft in this position using the sensor lock knob.

Index Mark

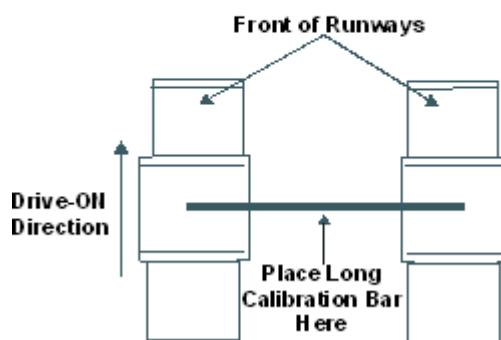
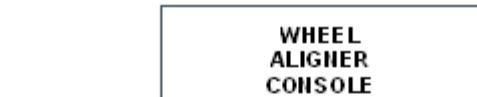


Sensor Lock Knob

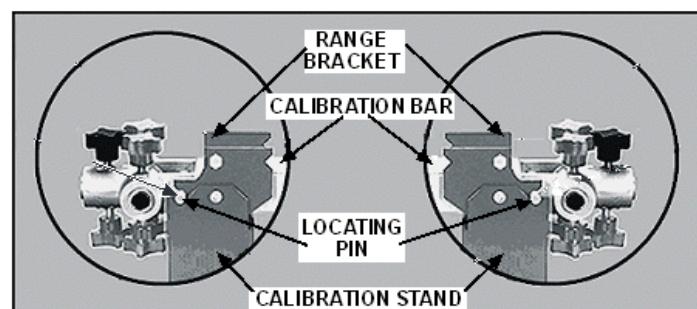
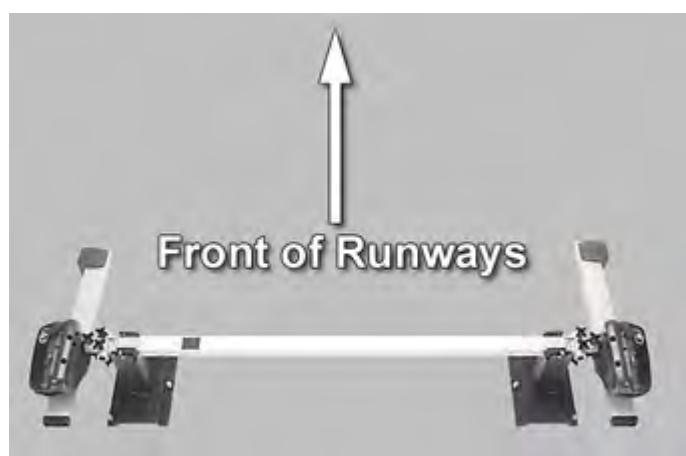


NOTICE

Older model sensors will not have the machined index mark notch. For these sensors, assign an index (sensor shaft position is not critical) using a permanent marker, and use this index mark for any future calibration.



The photo below illustrates a typical installation with front sensors mounted. This is the viewpoint from which all calibration instructions are described.



The locating pins on the calibration bar must be captured in the u-shaped notches on both sides of the range bracket. The range bracket is attached to the top of the calibration stand. Position the calibration bar on the stands as shown above.



NOTICE

Failure to use a stable surface during calibration may result in inaccurate results.

8.9.17. Installing the Calibration Bar and Stands

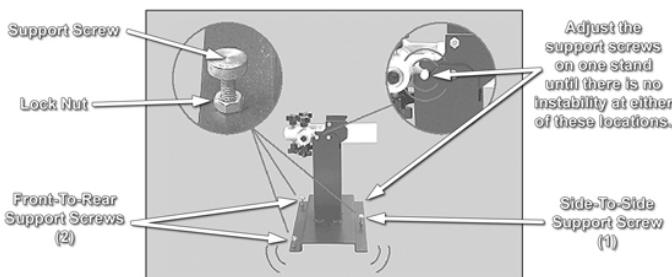
The calibration bar and stands must be placed on a reasonably level, smooth, solid, stable surface to perform the calibration procedure. The forward section of the lift rack that is used for wheel alignments is recommended, as seen below.

8.9.18. Stabilizing the Calibration Stand

One support screw is located on the inboard side of the stand and two are on the outer side of the stand. See the figure below.

Adjust all the support screws on one stand until they protrude from the bottom of the stand approximately four or five threads. Tighten the lock nuts at each support screw.

Place the calibration bar on the stands and adjust the support screws on the second stand until there is no movement or rocking of the bar and stands.

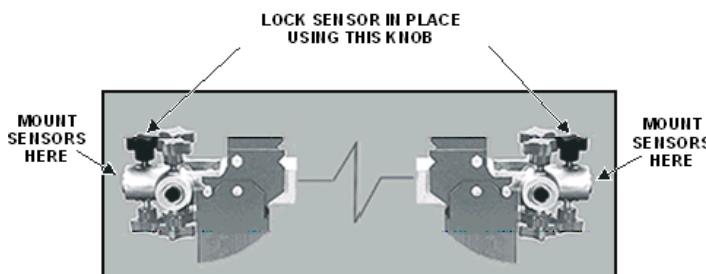


NOTICE

The calibration stands MUST NOT move during calibration.

8.9.19. Mounting the DSP Sensors

Mount the front sensors in the outer end of the calibration bar as shown below.



Level, and then lock the sensors in place using the outermost calibration bar locking knob on top of the calibration bar. The aligner monitor display will show the calibration bar with the appropriate knobs highlighted.



NOTICE

The sensor shafts must be fully inserted into the calibration bar. The shoulder of the sensor shaft must contact the flat face end of the calibration bar.

Connect the sensors to the console using the sensor cables.

8.9.20. Rotating the Calibration Bar

When prompted to "Rotate bar 180 degrees", remove the sensors from the calibration bar (do NOT disconnect power to them). Rotate the bar top-to-bottom as shown below, then remount and secure the sensors using the appropriate calibration bar lock knobs.

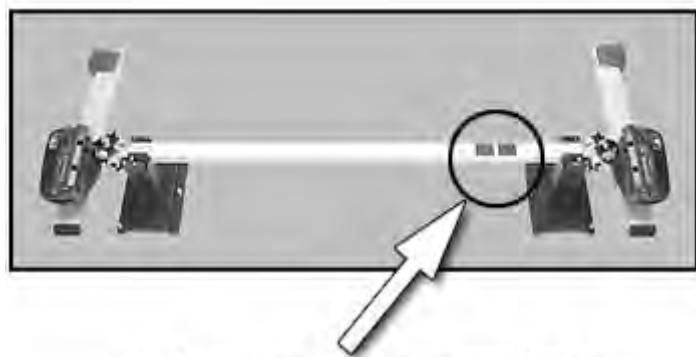
The calibration bar has lock knobs on both top and bottom. It is necessary to tighten the knobs on top of the bar only.

The correct starting position of the calibration bar will have the side with the single, black identification mark on the left side, as facing the aligner console.

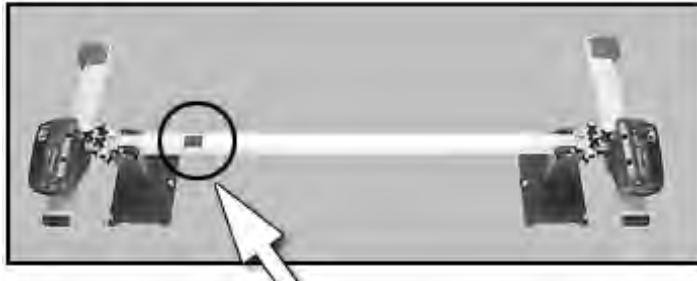


WARNING

Do NOT flip the calibration bar end-over-end.

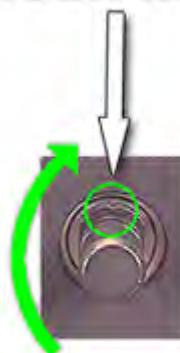


These orientation marks will be on the top after rotation.



**This orientation
mark will be on the
bottom after rotation.**

Index Mark



Sensor Lock Knob

8.9.21. Performing the Zero Calibration

Verify that the appropriate type sensors are selected and "All Sensors", "All Transducers", and "Zero Calibration (Long Calibration Bar)" are selected.

When finished verifying selections, press "Calibrate Sensors" to begin the procedure and follow the on-screen instructions.

For additional information and detailed procedural instructions, refer to Zero Calibration Using the Long Calibration Bar, [Form 4508T](#).

When instructed to steer the vehicle, steer as precisely as possible to zero degrees, then use care not to disturb the steering for the remainder of the test.

This test assumes that the vehicle or wheel adaptors do not move during the test procedure. When moving sensors to the opposite axle, detach the sensors from the wheel adaptors, leaving the wheel adaptors mounted to the wheels on which they were originally mounted. Carefully insert the sensors into the wheel adaptors, being careful not to disturb the vehicle or the wheel adaptor.

When the test has been completed, four values will be displayed showing toe and camber differences which will be close to zero. If the Mercedes-Benz account is in use, the values will be shown in green if calibration is OK. If any of the values are shown in red, the sensors need to be calibrated.

Failing to carry out the proper procedures described above and in the on-screen instructions may cause incorrect readings and produce a false indication that calibration is needed.

When the test has been completed, four values will be displayed showing toe and camber differences which will be close to zero if calibration is good. Values that are not close to zero may indicate that the sensors need to be calibrated or that one or more sensors is damaged.

If using Quick Clamp adaptors (Figure 1), or using standard self-centering adaptors with offset adaptors, part number 20-1394-1, (Figure 2), the difference values should typically be less than about 0.08° (0°05) because both of these adaptors arrangements provide mounting holes that are tightly fitted to the sensor shaft.

Begin the test by turning on the sensors and selecting the "Reverse Sensor Test" softkey from the "Service Programs" screen. The Reverse Sensor Test will be available only if applicable sensors are in use. Follow the on-screen instructions to carry out the test.

Before mounting the sensors on the wheel adaptors, rotate the index mark on the sensor shaft to the 12 o'clock position with the sensor held vertical and lock it in place using the sensor lock knob. Do not loosen the sensor lock knobs for the remainder of the test. When instructed to level the sensors do so only by loosening the locking lever or lock knob on the adaptor, not the lock knob on the sensor.

If using self-centering adaptors without offset adaptors (Figure 3), the differences should typically be within 0.16° (0°10'). Older self-centering adaptors which are somewhat worn or which do not have the newer teardrop-shaped shaft mounting hole may produce differences up to 0.20° to 0.25° (0°12 to 0°15').

Differences which are significantly larger than these indicated ranges for the type of adaptor used may indicate the need for calibration or sensor repair.



Failing to carry out the proper procedures described above and in the on-screen instructions may cause incorrect readings and produce a false indication that calibration or repair is needed.

8.10. Camera Based Sensor Calibration

For DSP600 Sensor Calibration Instructions refer to [Form 4952-T](#), DSP600 Series Sensor Calibration Instructions.

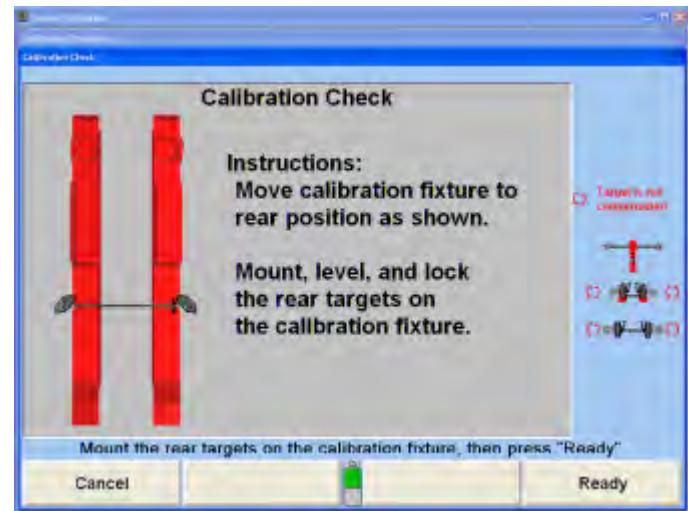
For HawkEye Sensor Calibration Instructions refer to [Form 5690-T](#), HawkEye Series Sensor Calibration Instructions.

For HawkEye Elite® Sensor Calibration Instructions, refer to [Form 6248-T](#), TD Targets® Installation, Characterization and Calibration Instructions.

Camera Based Sensor Calibration Check Procedure

After calibrating the Sensors, the following screen appears instructing you to position the calibration bar at the rear of the lift, and to mount, level, and lock the rear Targets® on the calibration bar (same as during calibration).

For extended L401, L421, RM, and RL lifts, refer to the appropriate lift rack operation instructions, for subsequent calibration bar positioning during calibration check procedure.

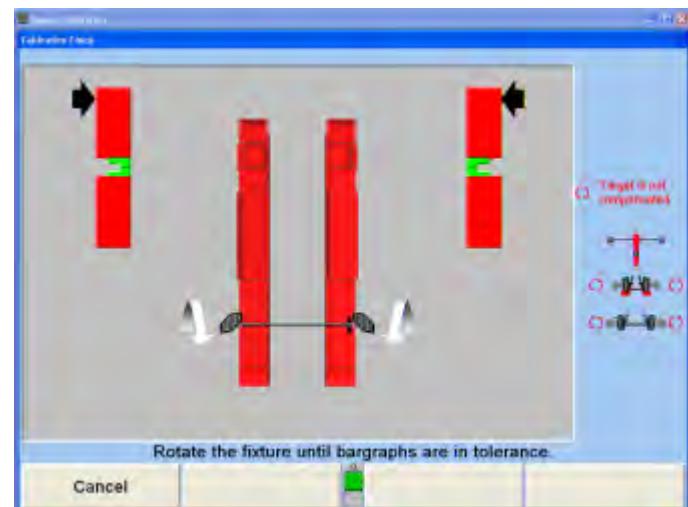


The screen above will appear. If you choose to not check the calibration now, this procedure can be performed any time during the alignment procedure if sensor measurements are questionable.

To check calibration later, the aligner must be reset then go to "Service Programs", "Calibrate Aligner", and press "Check Calibration" to begin the procedure.

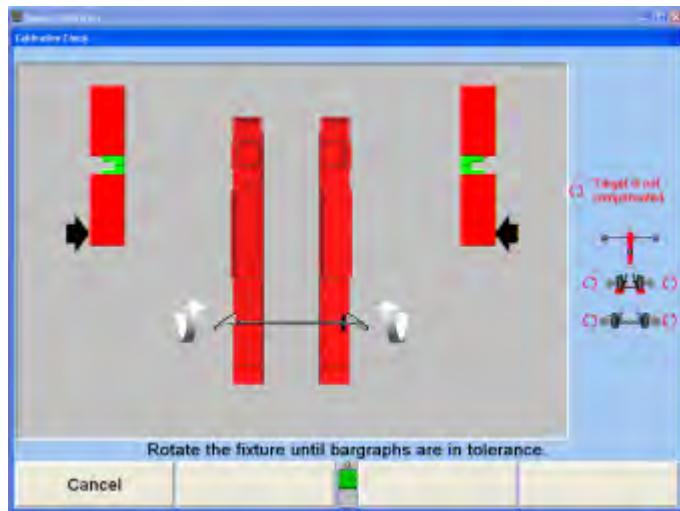
Press "Ready" when you are ready to begin.

Rotate the Targets® as instructed on the screen.



When the readings are stable, the cameras will capture the data and the procedure will advance to the following screen.

Follow the instructions and rotate the Targets® as directed.

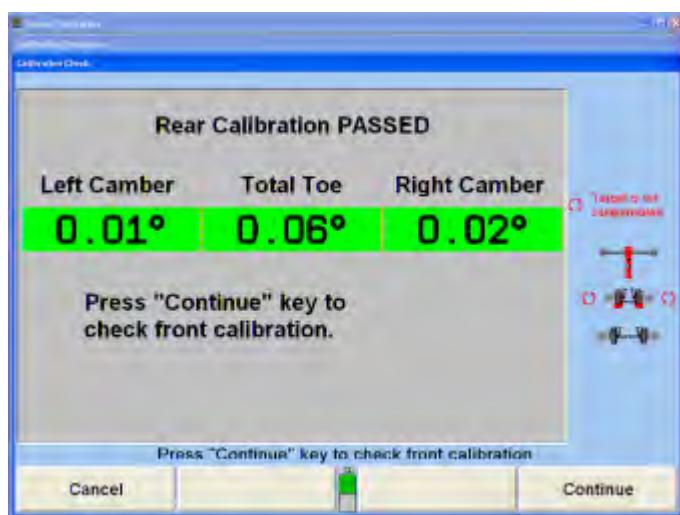


If rear calibration passes, the "Passed" screen appears as below.

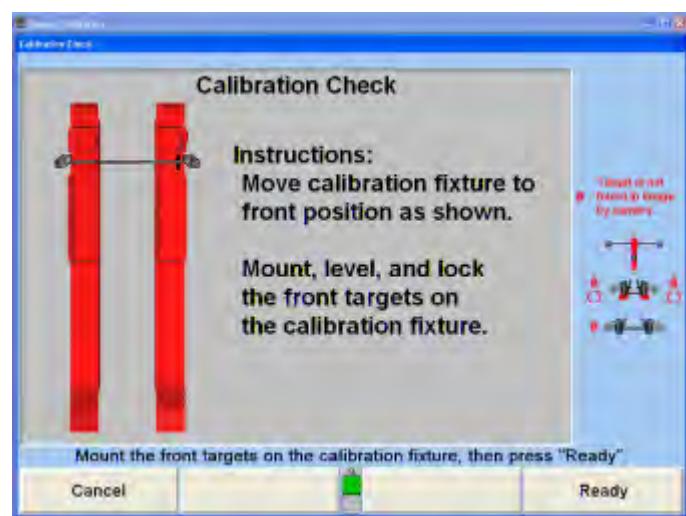


NOTICE

With DSP600L sensors the total camber is shown instead of left and right camber.

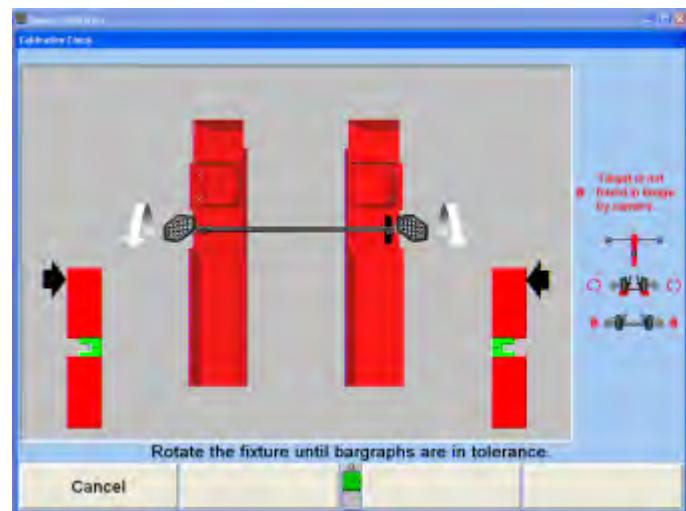


Press "Continue" and follow the instructions shown on the screen below.



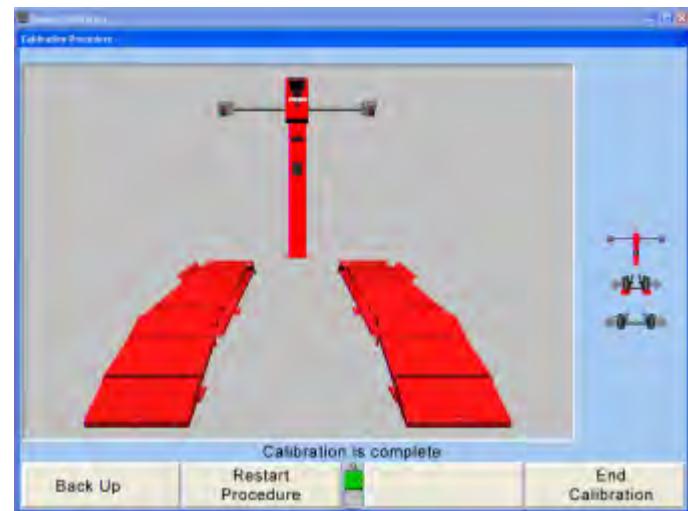
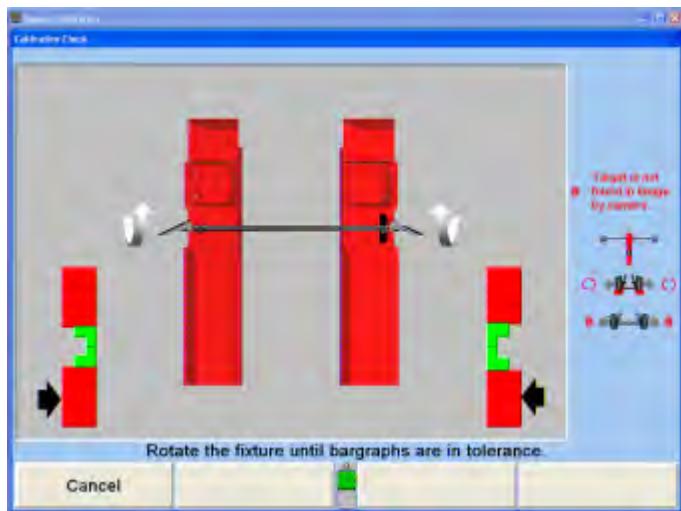
Remove the rear Targets® and move the calibration bar to the front position. Mount the front Targets® as directed (same as during calibration).

Press "Ready".



When the readings are stable, the cameras will capture the data and the procedure will advance to the next screen.

Follow the instructions and rotate the Targets® as directed.



When the readings are stable, the cameras will capture the data and the procedure will advance to the next screen.

If front calibration passes, the "Passed" screen appears as below.



NOTICE

With DSP600L sensors the total camber is shown instead of left and right camber.

The calibration procedure is complete. Press "End Calibration". This returns you to the main calibration screen. Press "End Calibration" again to return to the reset screen. When the calibration process is complete, do the following:

Carefully remove the Targets® from the calibration fixture and remount them on the wheel adaptors.

Remove the calibration fixture from the rack runway and store in a dry location.

8.10.1. Reverse Target Test

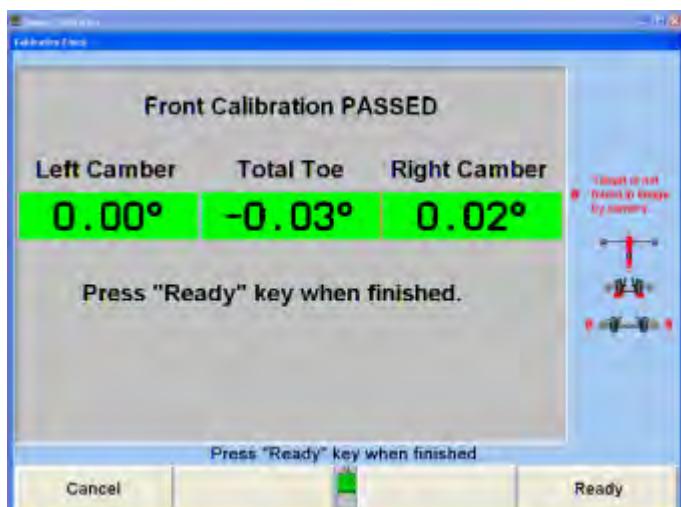
The Reverse Target Test is a quick check of the condition of a set of Targets®. This test is applicable to all versions of HawkEye and DSP600 sensors. Target pre-compensation is a prerequisite to performing the Reverse Target Test.

Begin the test by selecting the "Reverse Target Test" softkey from the "Service Programs" screen. The Reverse Target Test will be available only if applicable sensors are in use. Follow the on-screen instructions to carry out the test. This test assumes that the vehicle or wheel adaptors do not move during the test procedure.

When moving Targets® to the opposite side of the vehicle, detach the Targets® from the wheel adaptors, leaving the wheel adaptors mounted to the wheels on which they were originally mounted. Carefully insert the Targets® into the wheel adaptors, being careful not to disturb the vehicle or the wheel adaptor.

When the test has been completed, eight values will be displayed showing toe and camber differences which will be close to zero if calibration is good. Values that are not close to zero may indicate that the sensors need to be calibrated or that one or more target or camera is damaged.

Failing to carry out the proper procedures described above and in the on-screen instructions may cause incorrect



Press "Ready" as instructed and you will be returned to calibration checking entry screen. Press **■** key to present the next level of softkeys. Press "End Calibration" and restart the alignment procedure.

readings and produce a false indication that calibration is needed.

If using Quick Clamp adaptors, or using standard self-centering adaptors with offset adaptors, part number 20-1913-1, the difference values should typically be less than about 0.08° ($0^\circ 05'$) because both of these adaptors arrangements provide mounting holes that are tightly fitted to the sensor shaft.

If using self-centering adaptors without offset adaptors (Figure 3), the differences should typically be within 0.16° ($0^\circ 10'$). Older self-centering adaptors which are somewhat worn or which do not have the newer teardrop-shaped shaft mounting hole may produce differences up to 0.20° to 0.25° ($0^\circ 12'$ to $0^\circ 15'$).

Differences which are significantly larger than these indicated ranges for the type of adaptor used may indicate the need for calibration or sensor repair.

8.11. Inflation Station

The Inflation Station feature ensures that all tires on the vehicle are properly inflated. This will provide more accurate alignment values. Inflation Station is capable of lowering or raising (up to 80 p.s.i.) the air pressure on four tires on two axles. The pressure is only adjustable per axle, not per tire.

The “gauge” shows the current tire pressure. If “.....” is displayed, the hoses are not connected or Inflation Station is currently adjusting the tire pressure.

The “Before” reading under each “gauge” shows the tire pressure when the hoses were attached.

Each axles’ tire pressure is entered in the field at the middle of the screen. The upper field is the front axle, and the lower field is the rear axle.



Connect the Inflation Station hoses to the valve stems on the vehicle.

Enter the correct tire pressure for each axle.

Select “Inflate All Tires.”

Inflation Station will bring the tires to the specified pressure.



Failing to carry out the proper procedures described above and in the on-screen instructions may cause incorrect readings and produce a false indication that calibration or repair is needed.

9. Additional Information

9.1. Cradle Adjustment

The construction of passenger vehicles has changed drastically in the last twenty years. Rear wheel driven, full-framed cars, with conventional upper control arm adjustments for front camber and caster are no longer the majority of vehicles being serviced.

The majority of the passenger vehicles on the road today are front wheel driven, unibody vehicles using some form of front strut suspension and often limited to minimal front camber and/or caster adjustments.

Although many aspects of alignment have changed due to the design of the newer vehicles, one of the major issues is the presence of a subframe assembly often referred to as a "cradle."

9.1.1. Why Has the Cradle Become an Alignment Issue?

Many of the FWD, unibody vehicles are equipped with little, if any, front camber and/or caster adjustments. This lack of adjustment has created a need to find additional methods to adjust alignment angles to within the manufacturer's specifications.

One of the methods discovered, which may work on some vehicles, is to re-position the cradle assembly forward, rearward or side-to-side. Since the lower control arms attach to the cradle assembly's frame rails, re-positioning or shifting the cradle assembly will reposition the lower ball joints and change camber and/or caster angles.

Vehicles designed with rear cradle assemblies rely on the cradle to maintain proper control arm position for rear camber, toe, and thrust angle.

9.1.2. Is it Possible to Reposition a Cradle without Frame Equipment?

Yes, it is possible to reposition the cradle assembly without frame equipment in most cases. Many cradle assemblies have been re-positioned unknowingly by technicians performing service procedures such as transaxle repair and engine removal.

Bolting a cradle assembly to the body of the vehicle seems simple, but without the knowledge of how the cradle assembly position can affect alignment angles, it is easy to position the lower control arms far enough away from their intended position to cause alignment angles to be out of specification.

A basic understanding of the interaction between the cradle assembly and the alignment angles will provide the alignment technician with the knowledge to check the cradle position and reposition it when needed.

9.1.3. What are the Procedures for Properly Positioning a Cradle Assembly?

The procedures differ from manufacturer to manufacturer, however the concept behind shifting the cradle assembly and the affect it has on alignment angles, tire wear, suspension components, driveline components and steering components remains constant throughout the industry.



WARNING

The important fact to remember is the cradle assembly has one, and only one correct position, which is generally determined by alignment holes between the cradle assembly and the body of the vehicle.



WARNING

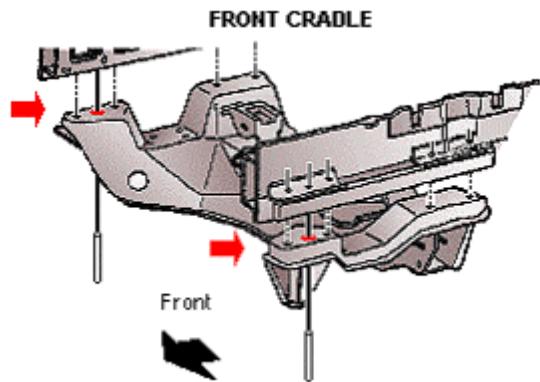
The information contained in this section is not intended to be a substitute for the vehicle manufacturer's service information regarding the cradle assembly.

9.1.4. Definition of Cradle

The term "cradle" is often used to describe a subframe constructed of two side frame rails with transverse supporting cross members. The frame rails and cross members may be welded or bolted together and are attached as an assembly to the unibody structure with bolts and insulating bushings. This assembly forms a cradle for the driveline and the engine.

9.1.5. Why are Cradle Assemblies Used?

The cradle assembly serves as a mounting platform for the entire driveline assembly and the lower control arms of the suspension on front or rear drive vehicles equipped with transverse mounted engines. A considerable savings in both time and money is realized utilizing this design, since the engine, transmission, differential, and lower suspension components can be assembled and installed as a unit.



9.1.6. What is the Proper Position for the Cradle?

In general, the position of the cradle in respect to the unibody must be at a location that provides proper driveline, suspension, and steering alignment. The exact position of the cradle assembly is normally documented in the manufacturer's service manual.

9.1.7. What Happens if the Cradle is Out of Position?

It is possible, however, for the cradle assembly to be secured in a position that is slightly off to one side or slightly forward or rearward of the intended position. This is due to the enlarged frame holes in the cradle rails.

Over-sizing of the frame holes is needed to simplify the attachment of the cradle assembly to the body of the vehicle. Unfortunately, this over-sizing also may allow the cradle to be positioned incorrectly with the body of the vehicle.

An improperly positioned front cradle assembly can affect camber, caster, setback and S.A.I./IA. The result may be:

Insufficient adjustment range

Premature tire wear

Vehicle instability

Improper drive line angles

In addition, since the upper suspension components (i.e. struts, stabilizer bar frame bushings, etc.), steering gear and upper engine mount are attached to the body, an incorrect position of the cradle assembly to the body may produce undesired stress on suspension and steering components.

An improperly positioned rear cradle may affect rear camber, toe and thrust angle. This may result in undesired "dog-tracking" and premature tire wear.

9.1.8. Vehicles with Adjustable Cradle by Manufacturer

The following list represents the majority of vehicle models having a unibody construction with moveable front frame rails, often called a "cradle assembly."

Front Adjustable Cradles

Buick

- Century (86-02)
- Electra / Park Avenue (85-90)
- LeSabre (86-99)
- Park Avenue / Ultra (91-02)
- Reatta (88-91)
- Regal (88-02)
- Rendezvous 4x2 and 4x4 (02)
- Riviera (86-99)

Cadillac

- Allante (87-93)
- DeVille incl. Concours (85-99)
- Eldorado (87-02)
- Fleetwood / Sixty Special FWD (88-93)
- Seville (87-02)

Chevrolet

- Celebrity (86-90)
- Lumina (90-01)
- Lumina APV (90-96)
- Monte Carlo (95-99)
- Venture 4x2 and 4x4 (97-02)

Chrysler

- Cirrus (95-00)
- Sebring Convertible (96-00)

Dodge

- Status (95-00)

Ford

- Taurus Sedan and Wagon (86-99)
- Thunderbird (89-97)
- Windstar (99-02)

Lincoln-Mercury

- Continental (88-94)
- Mark VIII (93-98)
- Cougar (89-97)
- Sable Sedan and Wagon (86-99)

placement after having been removed during engine or transaxle repair.

Inspect the cradle rails and cross members for damage. Bent or damaged cradle assembly components are good indicators that the cradle may have moved.

The inability to adjust camber to preferred specification on either side of the vehicle is another sign that the cradle may be out of position. S.A.I. measurements are also quite helpful in determining cradle position.

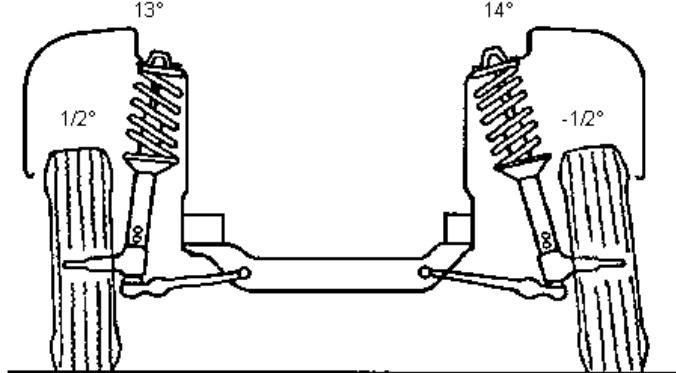
9.1.10. How Does the Cradle Position Effect Camber and S.A.I.?

Since the front cradle assembly controls the lower control arm position, incorrect placement side-to-side will affect front camber and Steering Axis Inclination (S.A.I.).

When the cradle assembly is moved sideways, one lower control arm is moved outward decreasing camber and increasing S.A.I. The other lower control arm moves inward increasing camber and decreasing S.A.I.

An incorrect side-to-side position of the rear cradle assembly will affect rear camber in the same manner.

The following example may clarify what occurs when the cradle assembly shifts to one side or the other.



EXAMPLE:

left camber = + 1/2°

right camber = - 1/2°

left S.A.I. = 13°

right AI = 14°

desired camber = 0°

Shifting the cradle to the positive camber side would equalize camber and AI.

The example above illustrates a combination of camber and S.A.I., which may indicate the need for repositioning

Oldsmobile

- Aurora (95-99)
- Cutlass Ciera (86-96)
- Cutlass Cruiser (86-96)
- Cutlass Supreme-all models (88-97)
- Delta 88 (86-87)
- Eighty Eight (incl. LSS) (88-99)
- Intrigue (98-02)
- Ninety Eight (85-96)
- Regency (97-98)
- Silhouette (90-02)
- Toronado (86-92)

Plymouth

- Breeze (96-00)
- 6000 incl. AWD (86-91)
- Aztek 4x2 and 4x4 (01-02)

The following example may clarify what occurs when the cradle assembly shifts to one side or the other.

Pontiac

- Bonneville (87-99)
- Grand Prix (88-02)
- Montana 4x2 and 4x4 (98-02)
- Trans Sport (90-98)

Saturn

- S-Series (SL/SC/SW) (91-02)

Vehicles with Adjustable Rear Cradles

- Ford Thunderbird (89-97)
- Mercury Cougar (89-97)

Always refer to the manufacturer's service information prior to attempting a change in cradle position. Each model requires a specific alignment technique unique to its cradle-to-body design.

9.1.9. Camber and Steering Axis Inclination (S.A.I.) Angles

The position of the cradle assembly may be incorrect due to collision, improper mounting bolt torque or incorrect

or "shifting" of the cradle assembly. The cradle position should be checked using the manufacturer's centering instructions. In this example, moving the cradle assembly to the positive camber side will reduce the difference in camber and S.A.I.

9.1.11. What are the Effects of an Improperly Positioned Cradle?

Although it is true that "shifting" a cradle often times brings "factory non-adjustable" or "out-of-adjustment" alignment angles closer to preferred specification, the side effects may be undesirable.

Shifting a cradle assembly away from proper alignment with the body, for the sake of reducing camber and S.A.I. difference, may result in unwanted torque steer, bump steer or damage to drive shaft assemblies.

Vehicle manufacturers specify the correct procedure for insuring a proper alignment of the cradle assembly to the body of the vehicle. Most of these vehicles have alignment holes in the cradle assembly and body of the vehicle, which require the use of an alignment dowel or similar device to establish the precise location of the cradle assembly.



DANGER

Variance from the manufacturer's procedure is an assumed liability and should not be taken lightly, as the results may be costly and dangerous.

9.1.12. Caster and Setback Angles

The existing position of the cradle assembly may be incorrect due to collision, improper mounting bolt torque, or incorrect placement after being removed for engine or transaxle repair.

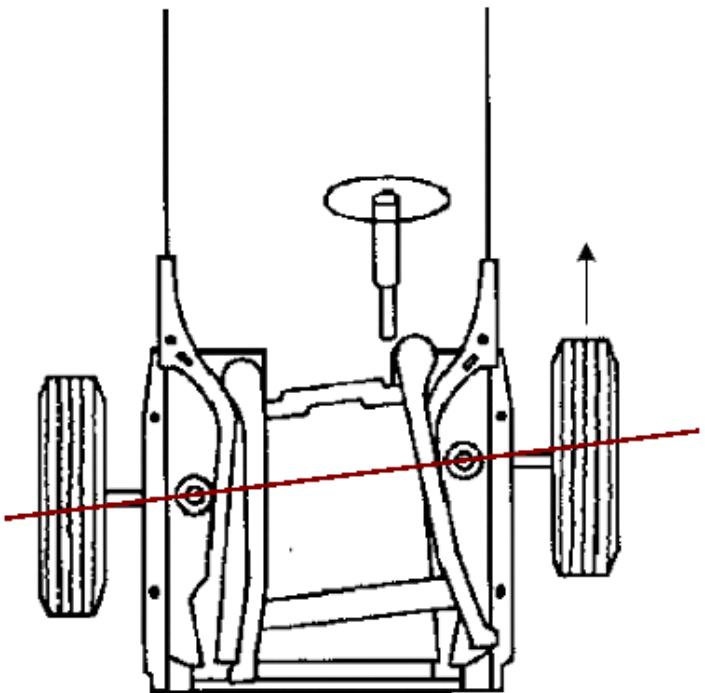
Inspect the cradle rails, lower control arms, and cross members for damage or signs of collision. Bent or damaged cradle assembly components are good indicators that the cradle may have moved.

Check the torque of the cradle mounting bolts and adjust as needed using the manufacturer's torque specification and procedure. Improperly torqued mounting bolts may allow the cradle to reposition itself during acceleration and braking.

The inability to adjust caster to preferred specification on either side of the vehicle is a sign that the cradle may be out of proper position. Another good indicator is when a significant amount of setback accompanies a low caster reading.

9.1.13. How Does the Cradle Position Effect Caster and Setback Angles?

Since the front cradle assembly controls the lower control arm position, incorrect placement corner-to-corner affects front caster and setback angles. When the cradle assembly is moved forward on one side and rearward on the other side, one lower control arm is moved rearward decreasing caster and increasing setback. The other lower control arm moves forward increasing caster and increasing setback.



An incorrect corner-to-corner position of the rear cradle assembly will affect rear individual toe and thrust angle. The following example may clarify what occurs when the cradle shifts forward on one side and rearward on the other side.

EXAMPLE:

left caster = 2°

right caster = 4°

setback = -0.80

desired caster = 3°

The cradle has shifted rearward to the left causing the left lower control arm to move rearward and decreasing left caster. This also increased negative setback.

The cradle moved forward on the right side causing the right lower control arm to move forward and increasing caster. This also increased negative setback.

The example above illustrates a combination of caster and setback, which may indicate the need for repositioning or "shifting" of the cradle assembly.

Shifting the cradle to a centered position would reduce setback and reduce the difference in left and right caster bringing them closer to preferred specification. The cradle assembly should be checked for proper positioning using the manufacturer's centering instructions.

9.2. Ride Height Specifications

Ride height specifications are determined by the height of the vehicle to a point specified by the manufacturer within specific tolerances.

Damage to vehicle suspension and a poor alignment can be caused when ride height is not within the manufacturer's specifications.

9.2.1. Toe Change

Front toe can change to an extreme toe-in or toe-out condition, depending on the location of the steering arms, when the steering linkage is forced into a downward operating position from sagging front coil springs. The result is heavy tire wear and poor handling characteristics.

9.2.2. Camber (Side-Slip)

A small amount of sag in the springs will increase lateral movement of the wheels, causing tires to slide laterally across the pavement. The result is extreme tire wear.

9.2.3. Shocks and Struts

Sagging springs will shorten the shock absorber causing the frame to be closer to the rubber strike out bumper. The result is the car will "bottom out."

9.2.4. Rear Springs

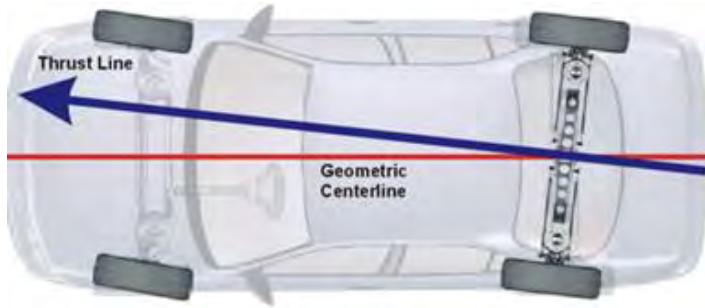
Caster and camber suffer the most when the rear springs are sagging. The result is poor handling and tire wear.

10. Glossary

10.1. Alignment Types

The basic alignment types are: Geometric Centerline Alignment, Thrustline Alignment, and Total Four-Wheel Alignment. The term "Front Wheel Alignment" is no longer accurate to describe any modern alignment type.

10.1.1. Geometric Centerline Alignment

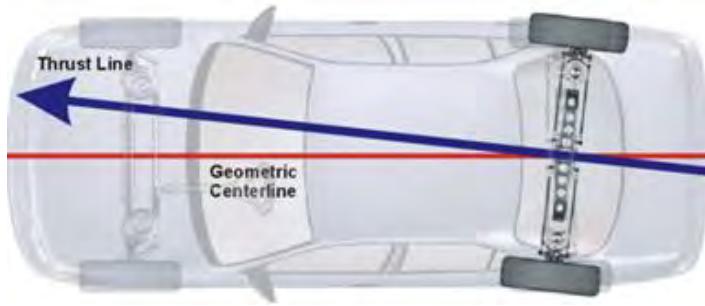


Toe on each front wheel is measured and adjusted using the geometric centerline of the vehicle as a reference.

Geometric centerline alignment has been used for many years and may provide a satisfactory alignment if the rear wheels are positioned squarely with the geometric centerline of the vehicle.

However, if the rear wheels of the vehicle (either solid axle or independent suspension) create a thrust line that is not parallel to the geometric centerline, the steering wheel position may not be centered properly as the vehicle moves in a straight direction.

10.1.2. Thrust Line Alignment



Aligning the front wheels to the thrust line of a vehicle is a significant improvement over aligning to the geometric centerline.

In the thrust line method, rear individual toe is measured (but not adjusted). The thrust line created by the rear wheels is used as a reference for aligning the front wheels.

As a result, the operator is assured of a straight steering wheel as the vehicle moves straight ahead.

10.1.3. Total Four-Wheel Alignment



Total four-wheel alignment is the ultimate wheel alignment service. Rear individual toe is measured, and then adjusted to the factory specifications. If adjusted correctly, the thrust line of the rear wheels becomes parallel to the geometric centerline of the vehicle.

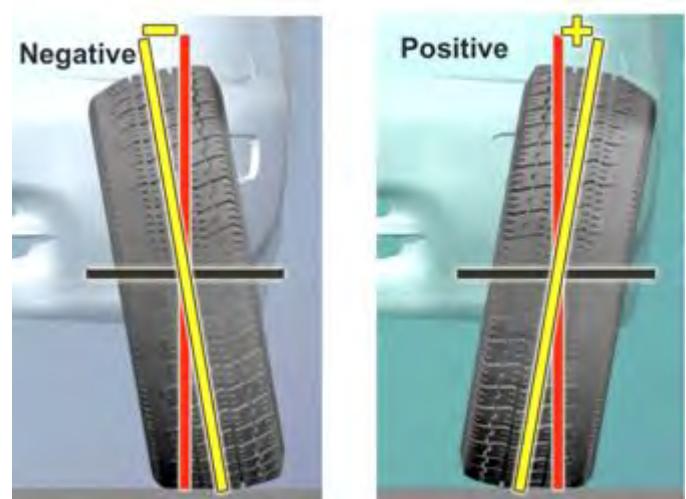
The front wheels are then aligned to the rear wheel thrust line.

Total four-wheel alignment provides the ability to correct a dog-tracking condition and assures a straight steering wheel as the vehicle moves in a straight line.

10.2. Alignment Angles and Measurements

This section provides definitions to terms used in the manual.

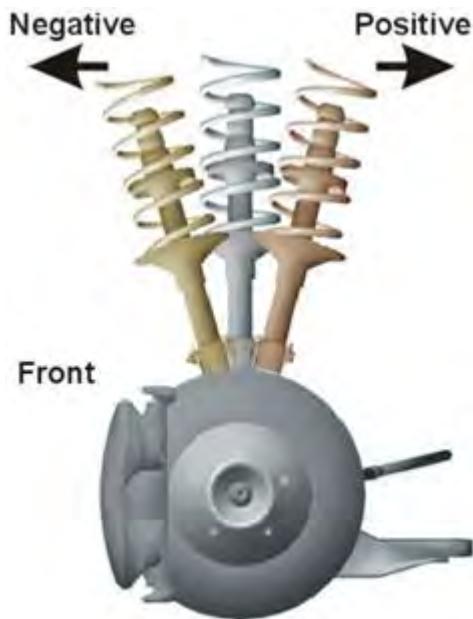
10.2.1. Camber



The angle formed by the inward or outward tilt of the top of the wheel, referenced to a vertical line as viewed from

the front. This angle is measured and displayed in degrees. Camber is positive when the wheel is tilted outward at the top and is negative when the wheel is tilted inward at the top.

10.2.2. Caster



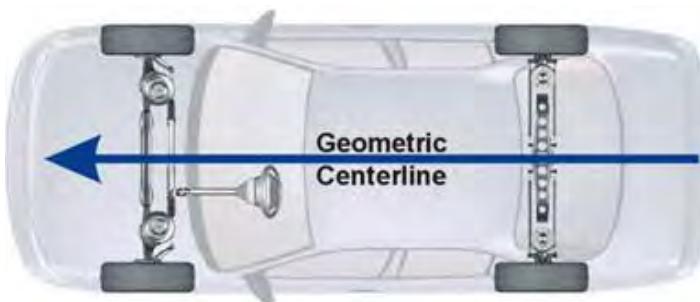
The forward or rearward tilt of the steering axis in reference to a vertical line as viewed from the side. This angle is measured and displayed in degrees. Caster is positive when the top of the steering axis is tilted rearward and is negative when the top of the steering axis is tilted forward.

10.2.3. Frame Angle



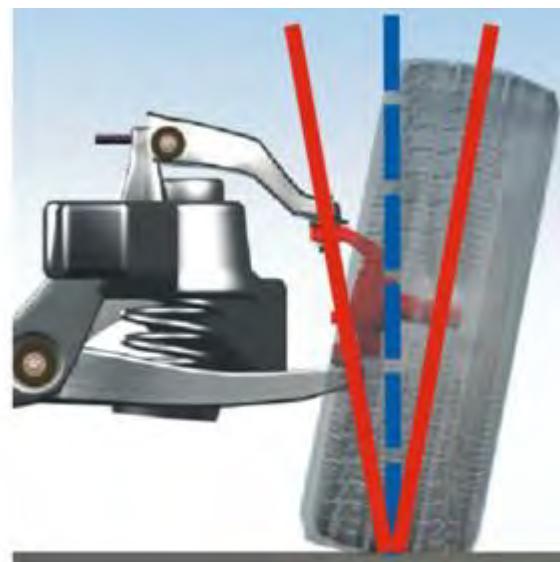
The angle (from a side view) formed by a horizontal line and a line drawn parallel to the frame. Frame angle is positive when the frame is higher at the rear and is negative when the frame is lower at the rear. The aligner does NOT calculate frame angle.

10.2.4. Geometric Center Line



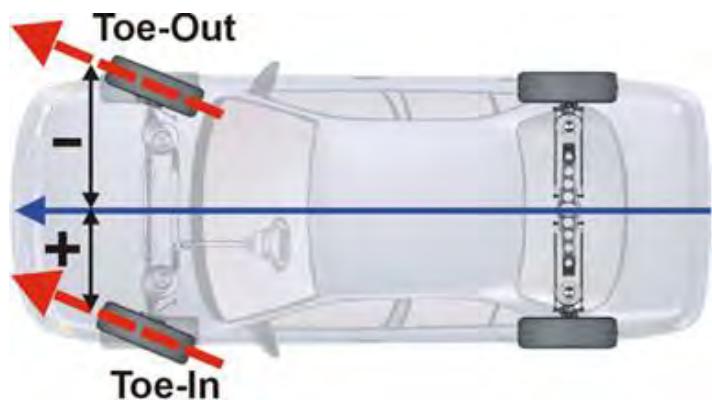
This is a line drawn through the midpoint of the front and rear axle.

10.2.5. Included Angle (I.A.)



The sum of S.A.I. and camber.

10.2.6. Individual Toe



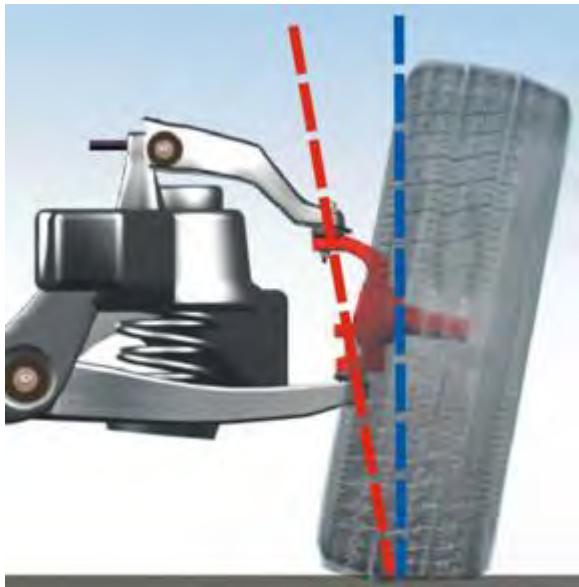
The angle formed by a horizontal line drawn through a plane of one wheel referenced to the reference line of the vehicle. Individual toe is measured in degrees but may be displayed in degrees, inches or millimeters. Toe-in is when the horizontal lines intersect in front of the wheel. Toe-out is when the horizontal lines intersect behind the wheel.

10.2.7. Ride Height



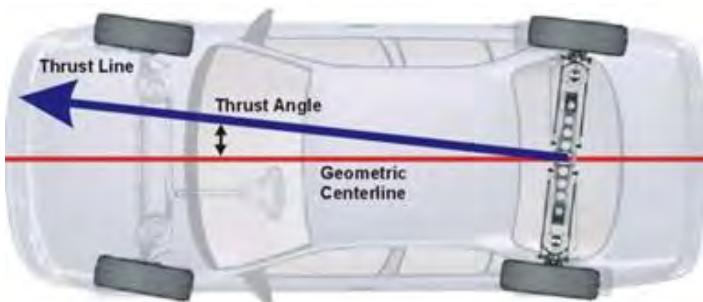
The height of the vehicle to a point specified by the manufacturer within specific tolerances.

10.2.8. Steering Axis Inclination (S.A.I.)



The angle formed by a line drawn through the upper and lower pivot points of the steering axis and a vertical line as viewed from the front. S.A.I. is measured and displayed in degrees.

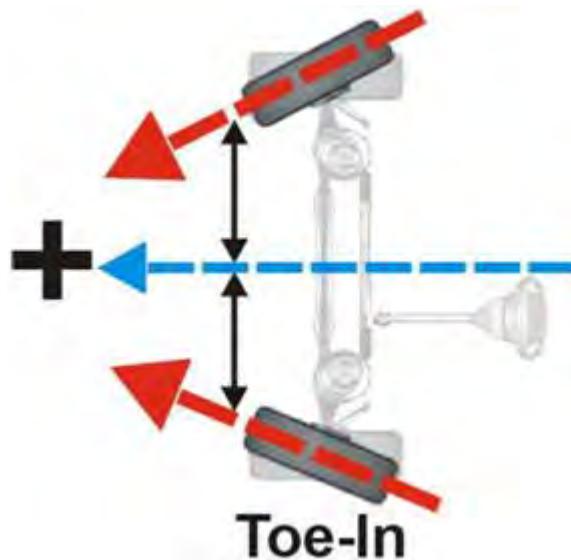
10.2.9. Thrust Angle and Thrust Line



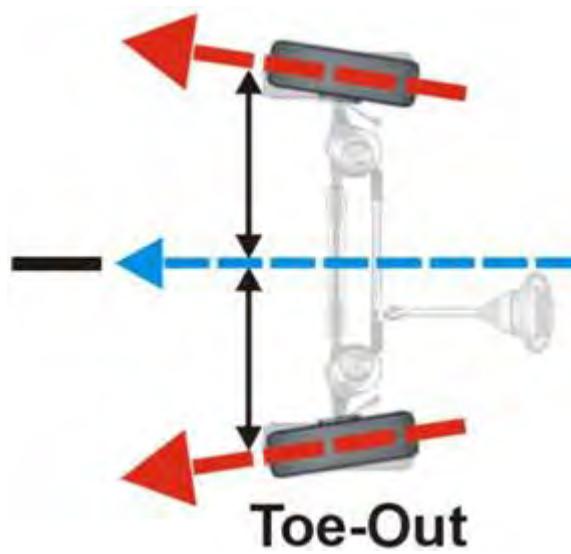
The angle formed by the geometric centerline and the thrust line of an axle is the Thrust Angle. This angle is measured and displayed in degrees.

The bisector of total toe angle of the axle is the Thrust Line.

10.2.10. Total Toe



Toe-In



Toe-Out

The angle formed by two horizontal lines drawn through the planes of two wheels on the same axle. Total toe is measured in degrees but may be displayed in degrees, inches or millimeters. Toe-in is when the horizontal lines intersect in front of the wheels. Toe-out is when the horizontal lines intersect behind the wheels.

10.2.11. Turning Angle



The difference in the angles of the front wheels in a turn.

10.3. Symmetry Angle/Set Back Definitions

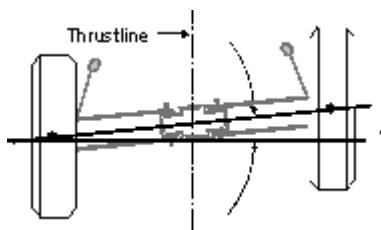


NOTICE

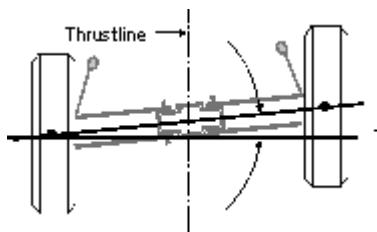
The names of these angles imply that fixed geometric positions are being determined. However, the definitions shown below indicate that their names can be misleading, and that the measurements can be affected by alignment conditions other than what their names would imply.

10.3.1. Front Set Back

Front Set Back is an angle formed by a line drawn perpendicular to the thrustline and a line connecting the centers of the front wheels. Front Set Back is positive when the right front wheel is behind the left front wheel. Front Set Back is negative when the right front wheel is ahead of the left front wheel. Front Set Back is measured as an angle, but can be displayed in inches or millimeters if front tread width is available in the vehicle specification data.

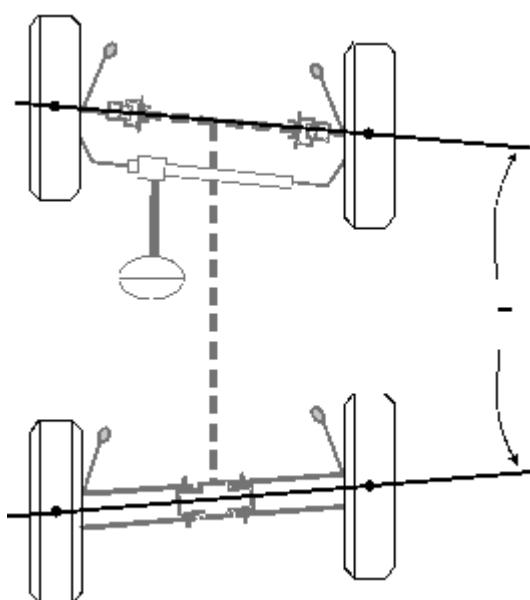


Rear set back is an angle formed by a line drawn perpendicular to the thrust line and a line connecting the centers of the rear wheels. Rear Set Back is positive when the right rear wheel is behind the left rear wheel. Rear Set Back is negative when the right rear wheel is ahead of the left rear wheel. Rear Set Back is measured as an angle, but can be displayed in inches or millimeters if rear tread width is available in the vehicle specification data.



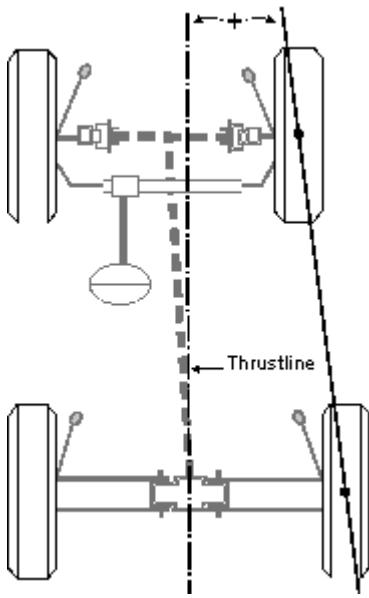
10.3.2. Wheelbase Difference

Wheelbase difference is an angle formed by a line connecting the centers of the front wheels and a line connecting the centers of the rear wheels. Positive wheelbase difference indicates that the right wheelbase is longer than the left wheelbase. Negative wheelbase difference indicates that the left wheelbase is longer than the right wheelbase. Wheelbase difference is measured as an angle, but can be displayed in inches or millimeters if the track width is available in the vehicle specification data.



10.3.3. Right Lateral Offset

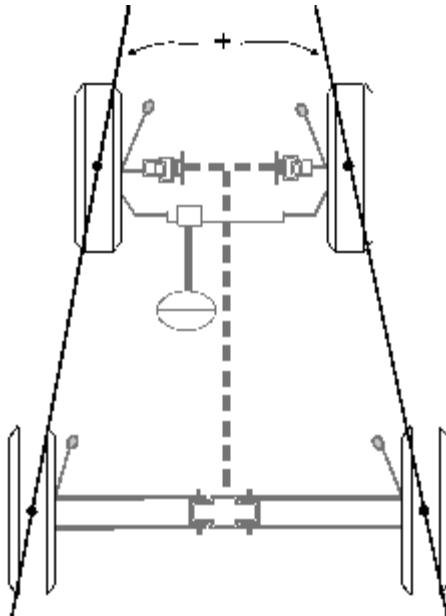
Right lateral offset is an angle formed by the thrust line and the line connecting the centers of the right front and right rear wheels. Right lateral offset is positive when the right rear wheel is offset to the outside when compared to the right front wheel. Right lateral offset is negative when the right front wheel is offset to the outside when compared to the right rear wheel. Right lateral offset is measured as an angle, but can be displayed in inches or millimeters if the wheelbase is available in the vehicle specification database.



10.3.4. Left Lateral Offset

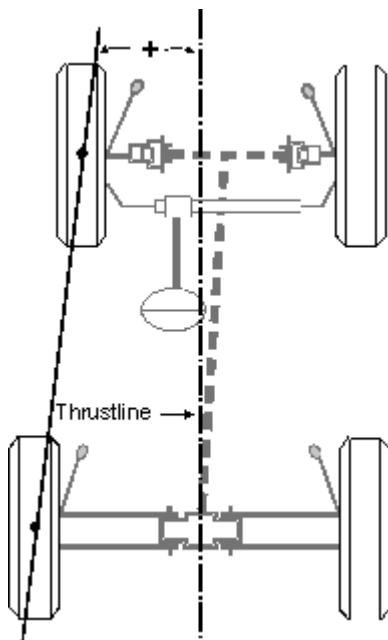
Left lateral offset is an angle formed by the thrust line and the line connecting the centers of the left front and left rear wheels. Left lateral offset is positive when the left rear wheel is offset to the outside when compared to the left front wheel. Left lateral offset is negative when the left front wheel is offset to the outside when compared to the left rear wheel. Left lateral offset is measured as an angle, but can be displayed in inches or millimeters if the wheelbase is available in the vehicle specification database.

and front left wheels. Track width difference is positive when the rear track width is larger than front track width. Track width difference is negative when the front track width is larger than the rear track width. Track width difference is measured as an angle, but can be displayed in inches or millimeters if the wheelbase is available in the vehicle specification database.



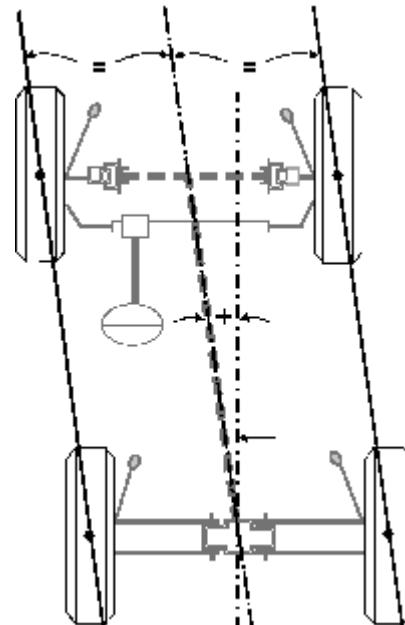
10.3.6. Axle Offset

Axle offset is an angle formed by the line, which bisects the track width difference angle, and the thrust line. Axle offset is positive when the rear axle is offset to the right. Axle offset is negative if the rear axle is offset to the left. Axle offset is measured as an angle, but can be displayed in inches or millimeters if the wheelbase is available in the vehicle specification data.



10.3.5. Track Width Difference

Track width difference is an angle formed by the line connecting the centers of the rear right and front right wheels and the line connecting the centers of the rear left



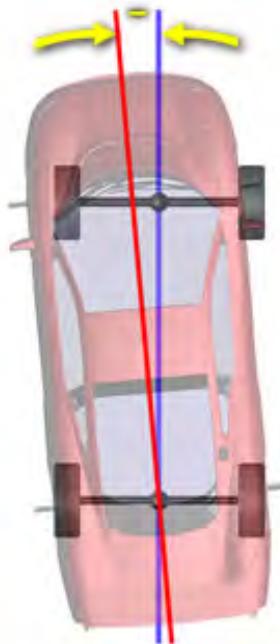
10.4. Advanced Vehicle Handling Values

Advanced alignment values represent forces, angles and dimensions which may affect vehicle handling. Modifications to a vehicle's suspension, tires and/or wheels often affect these values, which may result in unwanted changes to vehicle handling or ride quality.

Although most of these values cannot be adjusted directly, knowing the amount and direction of change can be very useful when diagnosing problems. These changes may indicate potential problems or improvements in vehicle ride, handling, stability, steering response, tire wear, and fuel efficiency.

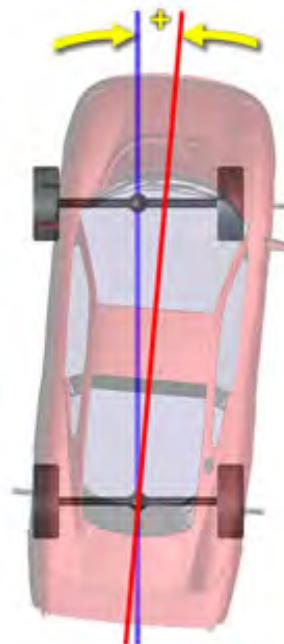
These values should be measured before and after any modifications to record the changes of both adjustable and non-adjustable readings.

There are no specifications for advanced alignment values.



10.4.1. Body Center Line Angle

Positive Body Center Line Angle



Negative Body Center Line Angle

NOTICE

Body Center Line Angle measurements require Live Ride Height Targets.

Description

Body Center Line is the center of the vehicle's body and measured using ride height targets affixed to the body of the vehicle. The alignment sensors are also used to find the geometric or chassis centerline of the vehicle.

Ideally, the body center line and the chassis center line are aligned with each other and to the thrust line of the vehicle. A substantial difference between body and chassis center line may be the result of collision or intentional modification.

The difference between body and chassis center line is shown as Body Center Line Angle. A positive number indicates the thrust line is to the right of body center line. Negative numbers indicate the thrust line is to the left of body center line.

Both Body Center Line Angle and Body Center Line Offset may be useful tools when diagnosing the cause of an excessive thrust angle.

What can change it

A horizontal shift of the rear axle may be caused by broken leaf spring centering pins, loose or broken U-bolts, bent trailing arms or damaged frame rails.

A horizontal shift of the front axle may be caused by cradle position (damaged or shifted), frame rail damage, loose or broken U-bolts or broken leaf spring centering pins.

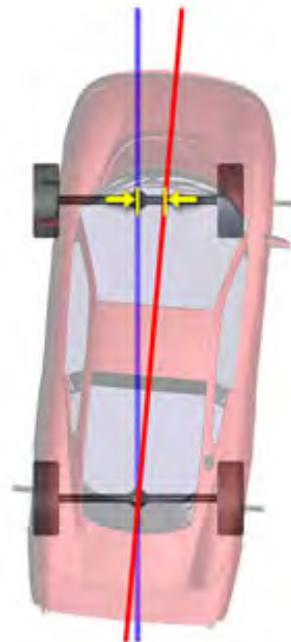
Collision, body repair, etc, may also cause these lines to be divergent.

Vehicle characteristics it effects

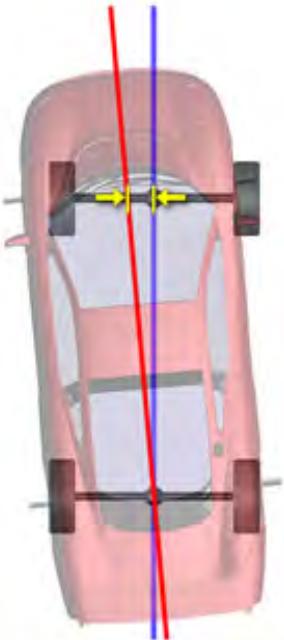
Any Body Center Line Angle measurement other than "0" will cause dog tracking.

10.4.2. Body Center Line Offset

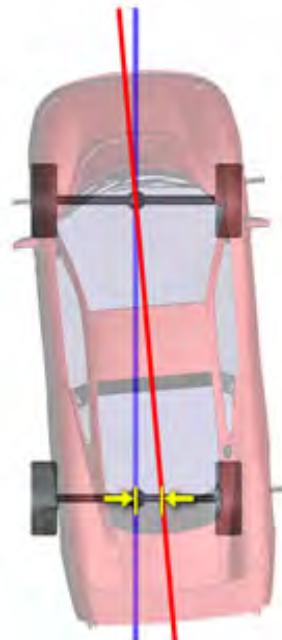
Front Positive Body Center Line Offset



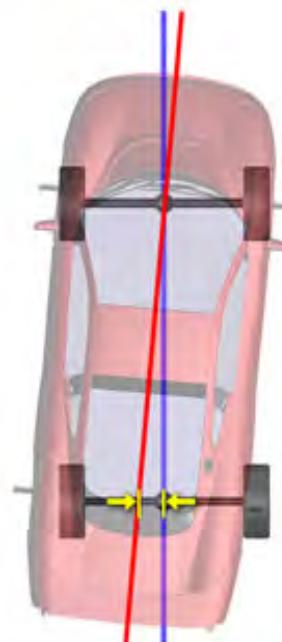
Front Negative Body Center Line Offset



Rear Positive Body Center Line Offset



Rear Negative Body Center Line Offset



NOTICE

Body Centerline Offset measurements require Live Ride Height Targets.

Description

Body Center Line Offset is the lateral distance between body center line and chassis center line at the front or rear axle. Both Body Center Line Angle and Body Center Line Offset may be useful tools when diagnosing the cause of an excessive thrust angle.

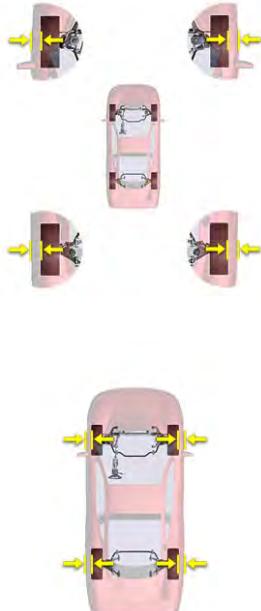
What can change it

Collision, body repair, etc, may cause these lines to be divergent.

Vehicle characteristics it effects

Any front to rear difference in body centerline offset will produce a non-zero Body Center Line Angle measurement, which will cause dog tracking.

10.4.3. Body Overhang



NOTICE

Body Overhang measurements require Live Ride Height Targets.

Description

Body Overhang is the distance, positive or negative, the wheel well overhangs the tire.

This measurement should be similar on either side of the same axle.

What can change it

Collision, body repair, etc, may cause these lines to be divergent.

Vehicle characteristics it effects

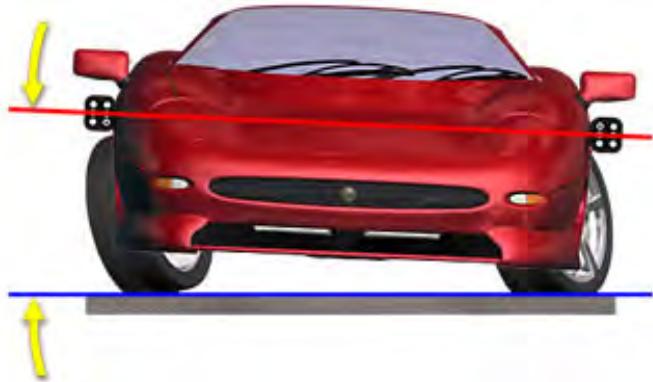
Wheels with greater offset or width can produce a negative Body Overhang, which means that a collision may occur between tire and wheel well when the springs are compressed.

10.4.4. Body Roll Angle

Positive Body Roll Angle



Negative Body Roll Angle



NOTICE

Body Roll Angle measurements require Live Ride Height Targets.

Description

Body Roll Angle is the vehicle body tilt from side to side that occurs when the wheels are turned from steer ahead to the maximum steering angle in either direction.

When the vehicle is steered from side to side, the body of the vehicle rolls due to a height change induced by the steering axis inclination (SAI) and caster. The side of the vehicle on the inside of the turn is usually lifted higher than the side of the vehicle on the outside of the turn.

Steering system and suspension symmetry can be evaluated by comparing the Body Roll Angles at predetermined steering angles. The Body Roll Angle should be equal and opposite for left hand and right hand turns. If there is a difference then a symmetry problem exists.

What can change it

Factors that influence Body Roll Angle are:

- Front caster

- Steering Axis inclination
- Spring rate
- Anti-sway bar configuration
- Wheel offset, diameter, and width

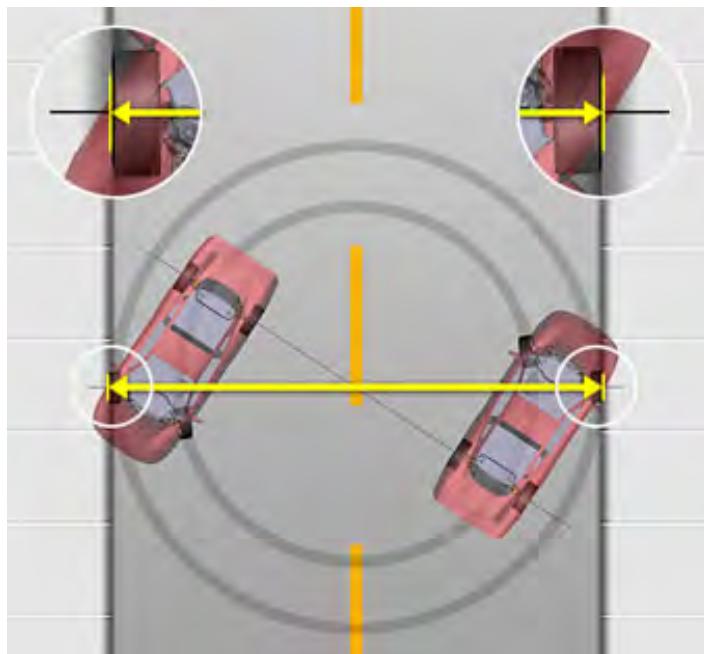
The following conditions may contribute to excessive differences in Body Roll Angles:

- Excessive cross caster and/or S.A.I.
- Sagged or broken springs
- Broken sway bar links

Vehicle characteristics it effects

Minimizing Body Roll Angle will help the vehicle maintain better traction in turns.

10.4.5. Curb-to-Curb Distance



Description

Curb-to-Curb Distance is the minimum diameter of a circle, as measured from the outside of the tire, needed to turn a vehicle 360°. This measurement is determined by the wheel base, tire width, and the vehicle's maximum turning angle.

What can change it

The following components can effect Turning Radius measurements:

- Loose or missing steering box mounting bolts.
- Bent or damaged steering arm.
- Loose or damaged idler arm.
- Loose or damaged pitman arm.

Incorrect total toe and modifications to the wheel base will also affect Turning Radius.

Vehicle characteristics it effects

The larger the Curb-to-Curb Distance, the more room a vehicle needs to turn around.

10.4.6. Rolling Force Lever

Positive Rolling Force Lever - Left Side



Positive Rolling Force Lever - Right Side



Description

Viewed from the front of the vehicle, the Rolling Force Lever can be illustrated by a line drawn perpendicular from the

steering axis to where the wheel centerline intersects the spindle centerline.

This measurement should be similar on either side of the same axle.

What can change it

Any modification or condition that can alter the position of the steering axis, or where the center of the wheel intersects the spindle, will cause the length of the Rolling Force Lever to change.

Using a wheel with a larger negative offset will cause the value to change towards the positive. Wheels with a smaller negative offset will change the value towards negative.

Changes in camber will affect Rolling Force Lever by tilting the spindle.

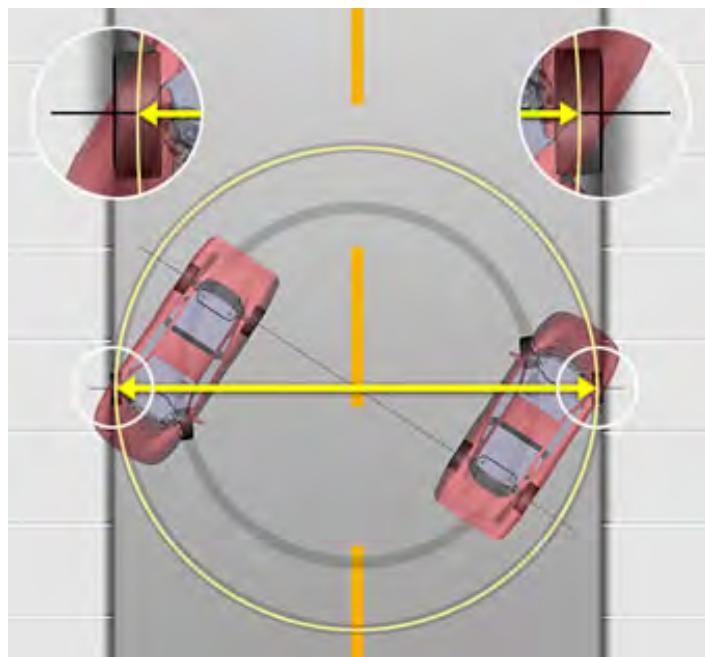
Damaged suspension components will also cause a change in Rolling Force Lever.

Vehicle characteristics it effects

As the Rolling Force Lever gets longer, it becomes easier for road forces to disturb and sometimes steer the wheels. Because of this, additional road shock can be transmitted to the steering wheel.

If the Rolling Force Levers are unequal side-to-side, the vehicle may pull. Road force and rolling resistance will act on the longer lever and try to steer the vehicle away from straight ahead. An under inflated tire will cause more steering pull when the Rolling Force Lever is longer.

10.4.7. Turning Circle



Description

Turning Circle is the minimum diameter of a circle, as measured from the center of the tire, needed to turn a vehicle 360°. This measurement is determined by the wheel base and the vehicle's maximum turning angle.

What can change it

The following components can effect Turning Radius measurements:

- Loose or missing steering box mounting bolts.
- Bent or damaged steering arm.
- Loose or damaged idler arm.
- Loose or damaged pitman arm

Incorrect total toe and modifications to the wheel base will also affect Turning Radius.

Vehicle characteristics it effects

The larger the Turning Circle, the more room a vehicle needs to turn around.

10.5. Safety System Alignment (ADAS Systems) Glossary

Refer to [Form 7165-T](#) for a list of current ADAS system terms and definitions as they relate to specific vehicle manufacturers.

11. Hunter's 3-Year Warranty

January 1, 2021

Hunter Engineering Company warrants new equipment to be free from defects in material and workmanship under normal conditions of use for a period of three (3) years from the date of installation.

The Details

Exceptions to this warranty are listed below:

- Field labor is covered under this warranty for a period of six (6) months.
- ADASLink™ units carry a one (1) year warranty and remain under warranty as long as a subscription is maintained there after.
- DAS 3000 units, including electronic circuit boards, carry a one (1) year warranty.
- Printers carry a one (1) year warranty.
- Normal consumables and wear items are not covered. Exception is batteries, which are warranted for a period of six (6) months.
- Product that has been subject to abuse, misuse, alterations, accident, exposure to the elements, tampering, unreasonable use, or not maintained in a reasonable or necessary manner.
- Replacement parts purchased through the Hunter Service Center and no longer covered by machine warranty are warranted for a period of six (6) months.

How do I submit a claim?

In case of any warranty claim, it will be necessary to contact your local authorized Hunter Service Representative. To have an item considered for warranty, it must be returned to Hunter Engineering Company for inspection and evaluation. This must be done on a freight prepaid basis. If after our inspection the product proves to be defective, and is within the time frame specified, we will repair or replace the item at no additional cost.

This is Hunter Engineering Company's only warranty with respect to new equipment. Hunter Engineering Company disclaims all other warranties to the extent permitted by law. This express warranty and any implied warranties of merchantability and fitness for a particular purpose shall not extend beyond the warranty period. Hunter Engineering Company is not responsible for any incidental or consequential damages, including, but not limited to, loss of business.

Can I transfer my warranty?

We do not authorize any person to assume for us any other liabilities with our products. Any remaining warranty may be transferred to subsequent purchasers by forwarding the purchaser's name, address, phone number and equipment serial number to:

Hunter Engineering Company | Customer Service Department
11250 Hunter Drive, Bridgeton, MO 63044
(800) 448-6848

See our document library at www.Hunter.com for additional details.

Develop skills and knowledge

EXCEL WITH HUNTER TRAINING



Live On-Site Training

All Hunter Training classes are led by ASE-certified instructors and all training material is kept up-to-date through a rigorous curriculum review process.

YouTube Video Tutorials

Product-focused videos explaining features and processes

Hunter University

Self-driven eLearning courses designed for all student levels



hunter.com/training



Hunter Learning Channel



Because of continuing technological advances, specifications, models and options are subject to change without notice.

PowerSlide and WinAlign are registered trademarks of Hunter Engineering Company. The PowerSlide logo is a trademark of Hunter Engineering Company.

HUNTER
Engineering Company
www.hunter.com