	GROUP	MODEL
	Chassis	**Optima (TF) 2011MY**
	NUMBER	DATE
	034 (REV 1, 6/21/13)	**October 2011**

TECHNICAL SERVICE BULLETIN

SUBJECT: OPTIMA (TF) VEHICLE TRACKING DIAGNOSIS & REPAIR

★ NOTICE

This bulletin has been revised to include additional information. New/revised sections of this bulletin are indicated by a black bar in the margin area.

This bulletin provides information about some 2011MY Optima vehicles produced from September 1, 2010 to August 31, 2011 that may be sensitive to road conditions and exhibit a slight drift to the left, especially when driving on long straight roads, and lead to customer annoyance complaints. This bulletin outlines procedures to help correct the "drift to the left" condition. Perform the corrective actions according to service flowchart by vehicle production date range. Ensuring that none of the other reasons for such complaints are present, such as improper tire pressure, tire wear, brake drag, excessively crowned roads and the like is an important part of the repair evaluation process, as is clear customer communications.

Engine / Tire	Vehicle	Part Name	Part No.	Figure
2.4 GDI / 16, 17" 2.0T - GDI / 17"	9/1/2010 ~ 3/10/2011	LH: Strut Assembly	54651 2T121	
		RH: Strut Assembly	54661 2T121	
2.0T - GDI / 18"	9/1/2010 ~ 2/25/2011	LH: Strut Assembly	54651 2T221	
		RH: Strut Assembly	54661 2T221	
All	6/1/2011 ~ 8/31/2011	Camber Bolt and Washer (Qty 2 per Box)	546993 Q000F FF	

★ NOTICE

The Vehicle Tracking Data Sheet on page 2 of this TSB is REQUIRED to be completed, then fax to 949-468-4875. Attach a copy of the check sheet to the R.O for your service records. Perform road tests using CASE 1 criteria at 40 MPH only. Camber adjustment procedures are based on CASE 1 tracking results "PASS / FAIL."

- Dealers and Sublet Vendors must adhere to the vehicle tracking diagnosis and repair flowchart provided on the Vehicle Tracking Data Sheet.
- Test drives should be completed with no passengers or excessive cargo in the vehicle.
- To perform proper vehicle tracking diagnosis, access to a **Hunter GSP 9700** equipped with **StraightTrak** is necessary. If you do not have access to such equipment, it may be located through the Hunter website (www.gsp9700.com).
- For additional information please refer to the latest Alignment Best Practices TSB CHA 032.
- **Alignment machine must be properly calibrated to ensure Warranty Claim Payment.**

File Under: Chassis

Circulate To: ☒ **General Manager** ☒ **Service Manager** ☒ **Parts Manager**

☒ **Service Advisor(s)** ☒ **Technician(s)** ☒ **Body Shop Manager** ☒ **Fleet Repair**

Vehicle Tracking Data Sheet

KIA MOTORS

A Record customer comments and vehicle data

Set Cold Tire Pressure

As Received Tire Pressure			
	LF	RF	
	LR	R R	

Explain tire pressure impact on vehicle pull to customer

B Road Test No Passengers

OK → Use Op Code: 54651F03

Vehicle Tracks Left

C

Tracks Straight STG Wheel Off-Center → 1. Align vehicle & set ASP
Aligner Make/Model: _____
Calibration Date: _____

Use Hunter GSP9700 StraightTrak Feature to measure and arrange all wheel/tire assemblies for least lateral force configuration.
Calibration Date: _____

2 Wheel Toe Adjust → Use Op Code: 54651F04

Road Test No Passengers → **OK** → Use Op Code: 54651F05

D

Prod Date	16" Rim	17" Rim	18" Rim	Flowchart Procedures
9/1/2010~ 2/25 /2011			X	Refer to Flowchart #1
9/1/2010~ 3/10 /2011	X	X		
2/26/2011 ~ 5 /31/2011			X	Refer to Flowchart #2
3/11/2011~ 5/31/2011	X	X		
6/1/2011~ 8/31 /2011	X	X	X	Refer to Flowchart #3

Use Op Code: See Labor Op Table ← **OK** ← Road Test No Passengers

Vehicle Does Not Track Straight – Contact Kia Technical Assistance Hotline at 1-800-494-4542 with this Data Sheet completed.

A Date:		VIN:	
Dealer Code:		Mileage	
Technician:		Prod Date:	

Customer Comments:

Tire Wear/Vehicle Condition Comments:

B Initial Test Drive (Ref: Use Case Criteria 1&2)		
PASS / NO PASS		LEFT / RIGHT
Case #1	MPH 40	Time: _____ sec

C Tire Lateral Force (from StraightTrak)	
Before: _____ lbs L/R	After: _____ lbs L/R
PASS / NO PASS	LEFT / RIGHT
Case #1 / MPH 40	Time: _____ sec

D Alignment Reading (degrees):				
Initial	L Front R		L Rear R	
Camber				
Caster				
Toe				
Final	L Front R		L Rear R	
Camber				
Caster				
Toe				
Case # 1	MPH 40	Time ____	L / R	

Final Repair Comments:

Service Manager (print name):_____

Signature: _____Date:_____

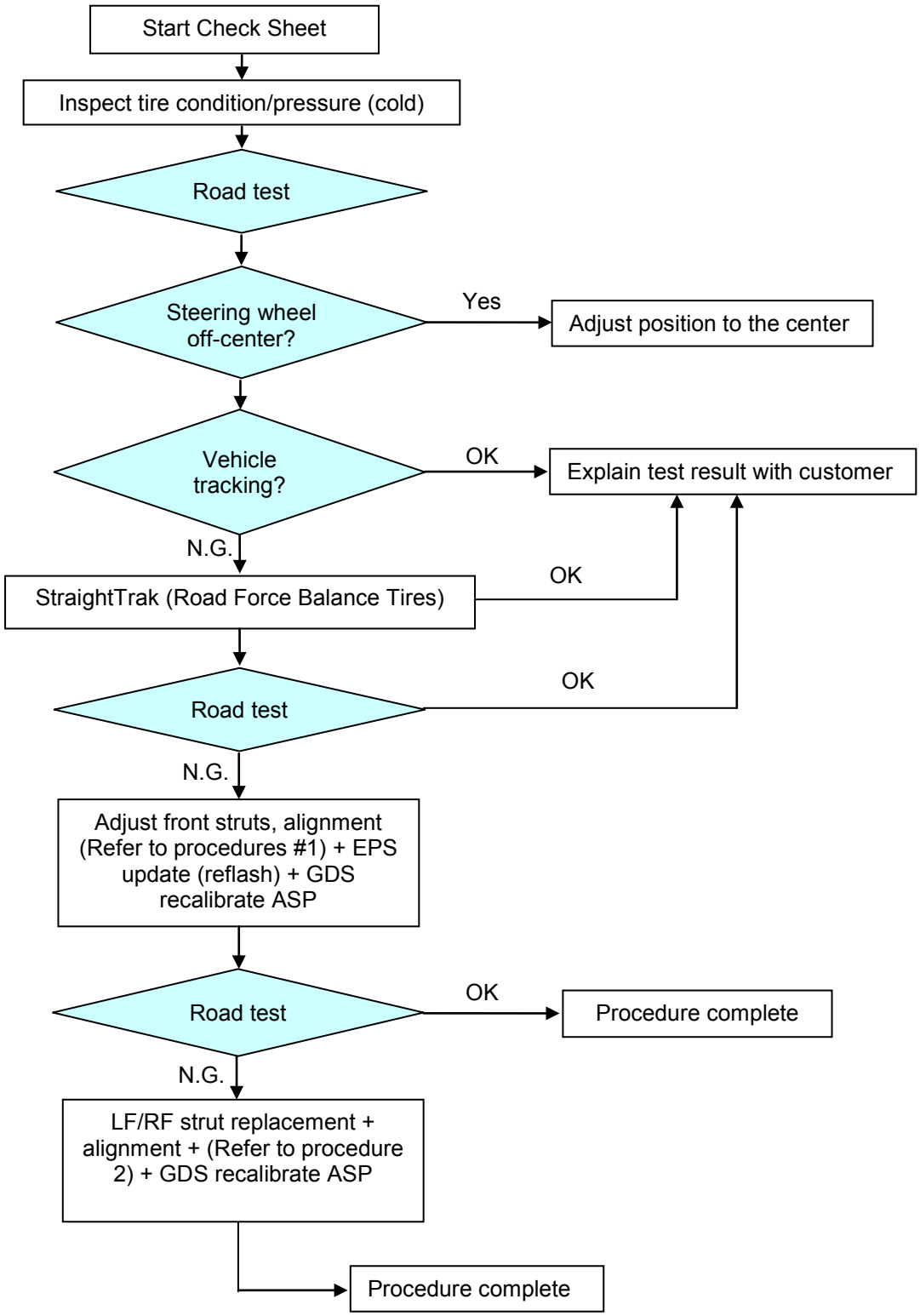
Road Test Case #1 – 3.3 ft	Road Test Case #2 – 10 ft
 Use minimal throttle input and do not vary throttle input during testing	
6 seconds or less at 40 MPH, or 4.5 seconds or less at 50 MPH.	9 seconds or less at 40 MPH, or 7 seconds or less at 50 MPH.

THIS COMPLETED DATA SHEET IS REQUIRED TO BE SUBMITTED BY: FAX (949-468-4875)

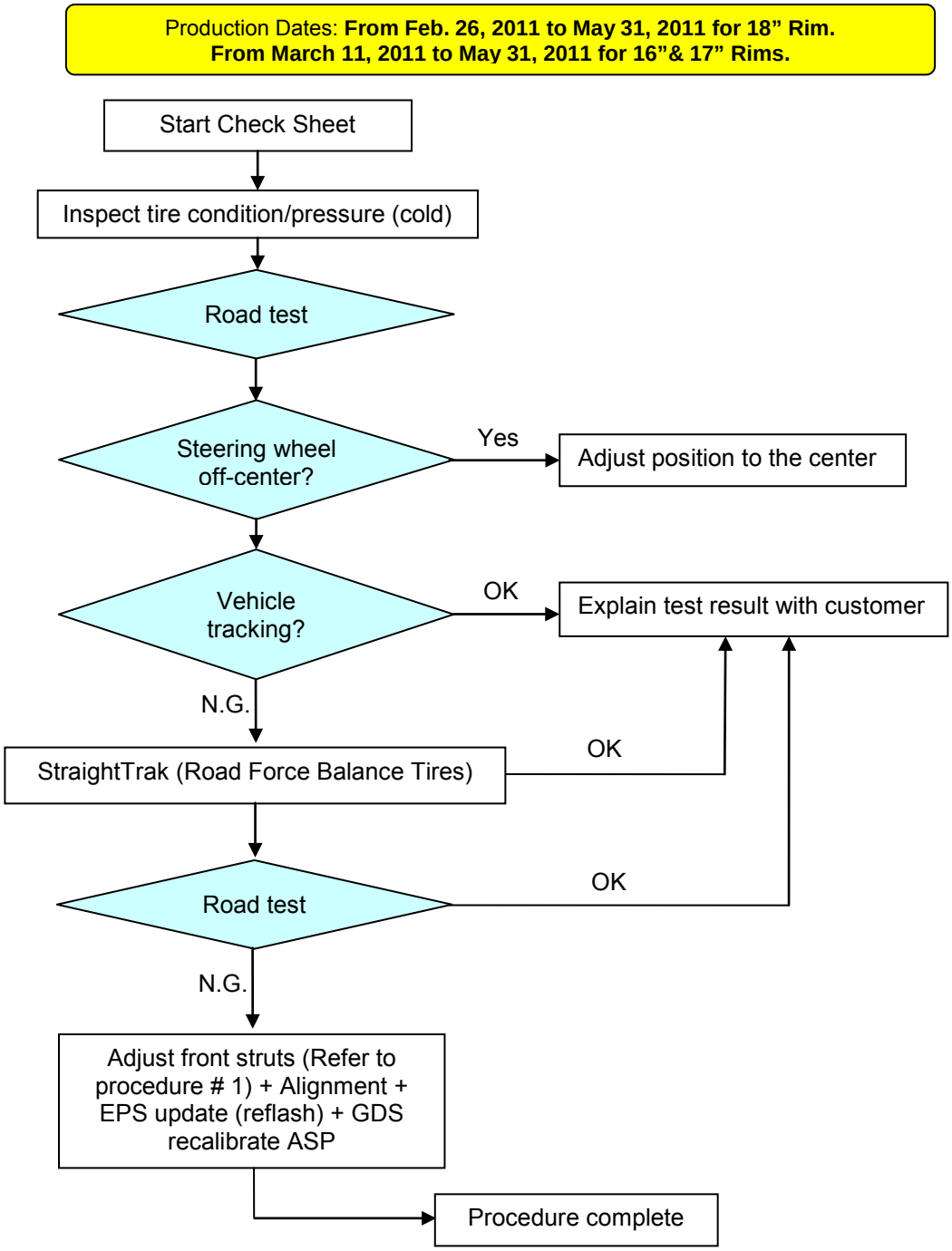
SUBJECT: OPTIMA (TF) VEHICLE TRACKING DIAGNOSIS & REPAIR

Service Flowchart Procedures:

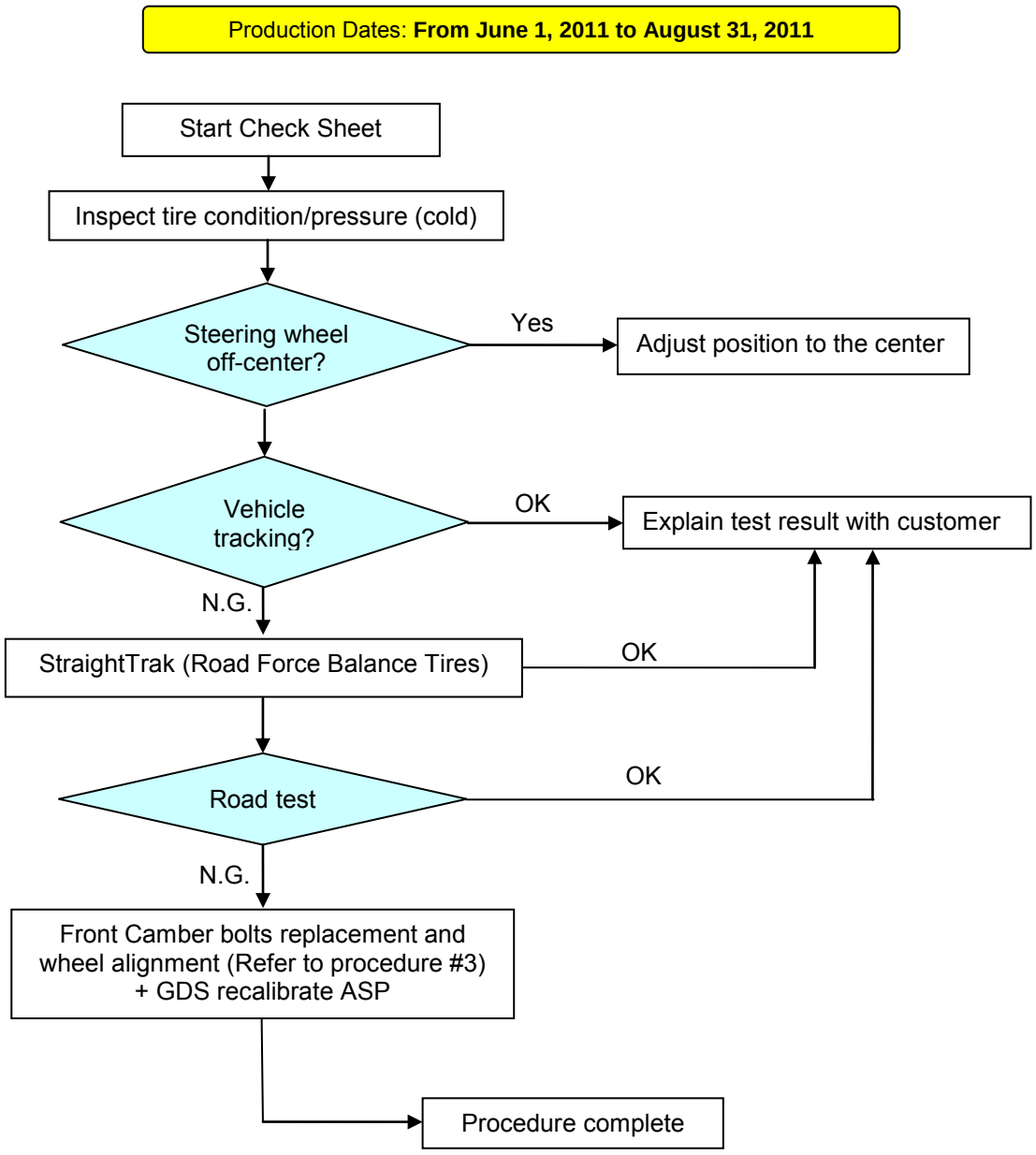
1. Production Dates: **From Job #1 to Feb. 25, 2011 for 18" Rims. From Job #1 to March 10, 2011 for 16" & 17" Rims**



2.


Production Dates: From Feb. 26, 2011 to May 31, 2011 for 18" Rim.
From March 11, 2011 to May 31, 2011 for 16"& 17" Rims.
Start Check Sheet
Inspect tire condition/pressure (cold)
Road test
Steering wheel off-center?
Yes
Adjust position to the center
Vehicle tracking?
OK
Explain test result with customer
N.G.
StraightTrak (Road Force Balance Tires)
OK
Road test
OK
N.G.
Adjust front struts (Refer to procedure # 1) + Alignment + EPS update (reflash) + GDS recalibrate ASP
Procedure complete

3.


Production Dates: From June 1, 2011 to August 31, 2011
Start Check Sheet
Inspect tire condition/pressure (cold)
Steering wheel off-center?
Yes
Adjust position to the center
Vehicle tracking?
OK
Explain test result with customer
N.G.
StraightTrak (Road Force Balance Tires)
OK
Road test
OK
N.G.
Front Camber bolts replacement and wheel alignment (Refer to procedure #3) + GDS recalibrate ASP
Procedure complete

Optima (TF) Alignment Specifications Before 11/29/2011

Item	Left Front	Right Front
Camber Angle	-0.8 ± 0.5°	-0.1 ± 0.5°
Caster Angle	4.44°±0.5°*	4.44°±0.5°
Toe Angle	0.08 ± 0.1°	0.08 ± 0.1°

*Specification shown in standard format. Actual lower limit is 3.64°.

Item	Left Rear	Right Rear
Camber Angle	-1.0°±0.5°	-1.0°±0.5°
Caster Angle	N/A	N/A
Toe Angle	0.085°±0.1°	0.085°±0.1°

Note: Do Not Exceed 1° of Cross Camber

Optima (TF) Alignment Specifications After 11/29/2011

Item	Left Front	Right Front
Camber Angle	-0.8 ± 0.5°	-0.1 ± 0.5°
Caster Angle	3.99° ±0.5°	3.99°± 0.5
Toe Angle	0.08 ± 0.1°	0.08 ± 0.1°

Item	Left Rear	Right Rear
Camber Angle	-1.0°±0.5°	-1.0°±0.5°
Caster Angle	N/A	N/A
Toe Angle	0.085°±0.1°	0.085°±0.1°

Note: Do Not Exceed 1° of Cross Camber

★ NOTICE

•All vehicles must be road tested and the results recorded on this vehicle tracking data sheet.
•Perform all road testing using Road Test Case #1 criteria, at 40 MPH.

•For vehicles with camber bolts, adjust cross camber according to road test results, see specs below.

- Camber Tolerance: -0.5° ± 0.5° - Not to exceed 1° cross camber

- For vehicles that track right, a front camber adjustment may be necessary:
  Front left: -0.8 ± 0.5°, Front right: -0.5 ± 0.5°
- For vehicles that track left, a front camber adjustment:
  Front left: -0.8 ± 0.5°, Front right: -0.1 ± 0.5°

Customer / Dealer Education: Factors that Influence Vehicle Tracking

Vehicle drift or pull can be attributed to several factors. Understanding what can affect it is imperative for anyone repairing a vehicle with a tracking condition.

Air pressure - Low or uneven tire pressure can cause a vehicle to drift or pull towards that tire with the lowest pressure. Remember that cold tires register slightly lower pressure than tires that are warm from usage. Ensure that all tires are correctly inflated.

Alignment

- **Camber** - A vehicle will track towards the side with more positive front camber.
- **Caster** - A vehicle will tend to track towards the side with less positive caster.
- **Steering Axis Inclination (SAI)** - The angle formed by the line drawn through the steering pivot axis and a line at true vertical when viewed from the front of the vehicle. SAI is designed into a vehicle's suspension and aids straight-line stability. This angle can be measured by the alignment machine. For Hunter units, it is measured during the caster sweep process. It is useful for checking for damaged components when the SAI difference between left and right sides is more than 1 degree. If SAI is lower on one side of the vehicle it may indicate a bent lower control arm. If SAI is higher on one side of the vehicle it may indicate damage to the upper strut mount.

Thrust angle - This is the direction the rear axle is pointing as a result of the rear toe angles and results in the steering wheel being off-center. To avoid this situation, rear camber and toe should be adjusted before the front when performing a four wheel alignment. After the rear is set, center the steering wheel, lock it in place, then adjust the front camber, caster, and toe (if applicable).

Tires - Tires can have significant effect on vehicle tracking. Arranging tires on a vehicle according to StraightTrak can greatly improve or eliminate a vehicle tracking condition. Tires contribute to vehicle tracking in the following ways:

- **Ply steer** - Ply steer is an inherent characteristic in a tire which results in a lateral force as the tire rolls. Rotating tires may aid in cancelling out the effects of ply steer.
- **Conicity** - Tire conicity refers to the shape of the tire, and how cone-shaped it is. This can influence vehicle tracking. Conicity can be present in a new tire due to manufacturing, or in a used tire due to camber wear.

Weight - The amount of weight and where the weight is placed alters a vehicle's alignment angles, thus changing the tracking tendency. It is important to consider this when diagnosing a vehicle tracking

Road Crown - Every vehicle will have a tendency to follow road crown towards the low side of the crown.

Brake Drag - If one side of a vehicle's brakes are dragging, the vehicle can have a tracking tendency towards that side. Inspect the brake system to ensure brake drag is kept to a minimum on all four wheels.

Cross Winds - Cross winds can push a vehicle towards one side of the road. It is important to conduct road testing by driving a vehicle in opposite directions to verify the effects of cross winds.

Proper Alignment Rack Usage and Maintenance:

★ NOTICE

These tips apply to Hunter Engineering alignment racks and wheel balancers that feature StraightTrak.

It is imperative that the following items be followed to ensure accurate alignment readings.

Aligner Calibration/Maintenance Schedule - It is required that all dealer alignment racks be calibrated by a representative every 6 months. This allows the representative to update vehicle specs and inspect and maintain equipment.

Rolling Compensation - The rolling compensation procedure is critical to ensuring an accurate alignment. When performing the rolling compensation, be sure to do the following:

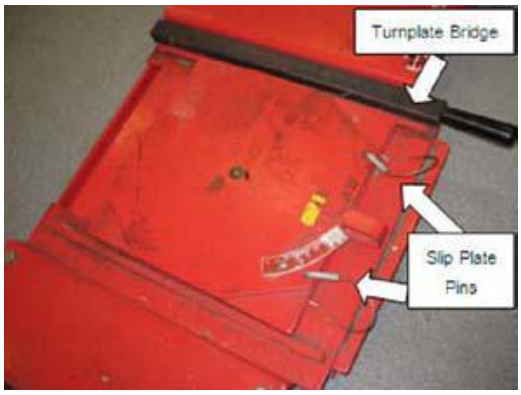
- Set tire pressure to factory specification.
- Verify that the vehicle is not excessively loaded. Remove any heavy items.
- Ensure the lift is level so vehicle's suspension and steering are in a neutral position.
- Set the target levels before rolling compensation. After completing the compensation, do not relevel the targets.

Roll the vehicle by turning the left rear tire. This will not disturb the vehicle's suspension and steering systems

★ NOTICE

Do not roll the vehicle by pushing or pulling on body parts, bumpers, etc.

Ensure the pins are in the slip plates, and the turnplate bridge is flush with the rolling surface to minimize the vehicle's suspension movement.



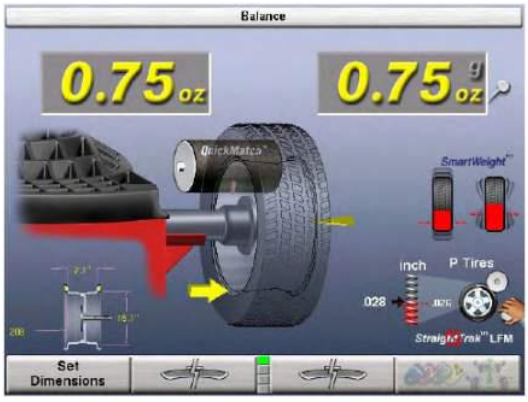
Slip Plates - The slip plates of a Hunter alignment rack are designed to move smoothly and freely to provide accurate measurements. Before driving a vehicle onto the rack, check that they move freely and do not bind. Periodically clean the area underneath the slip plates by blowing compressed air through to remove any debris. If this does not free a binding plate, contact your local Hunter representative for cleaning and lubrication recommendations.

StraightTrak® LFM feature - StraightTrak is an optional feature for Hunter's GSP9700 wheel balancer. This feature measures lateral force of a tire due to ply steer, conicity, and other issues which may contribute to vehicle tracking. This is a very useful tool for vehicles with a tracking condition.

1. Use StraightTrak to arrange the 4 wheel/tire assemblies of a vehicle in a configuration which will result in the least tire pull force by doing the following:

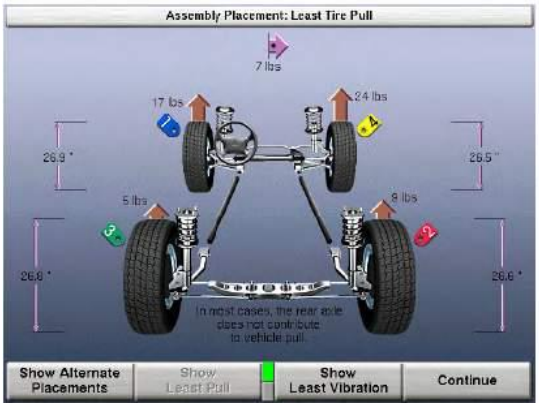
   Remove all wheel/tire assemblies from the vehicle.

   Balance the front left assembly on the Hunter GSP9700 with StraightTrak feature. An icon located in the lower right corner will show whether or not StraightTrak is enabled.



2. After balancing, press the tire tag button located at the bottom right of the screen to assign a number to that assembly. Label the assembly accordingly with a tag or chalk mark.

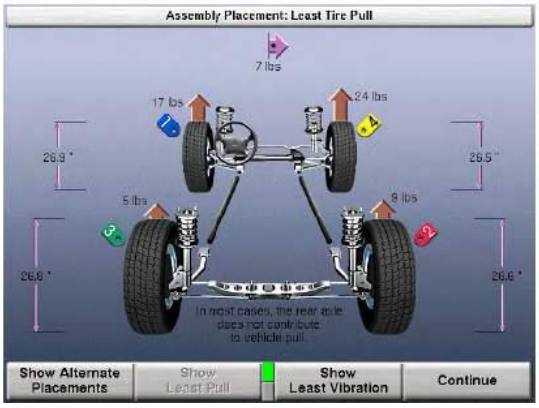
3. Continue to balance and tag all four assemblies. After all are completed, the screen will show tire positioning and the effect on tire pull or vibration. The purple horizontal arrow at the top of the screen shows overall pulling force and direction due to tires. The brown vertical arrows above each tire show the RFV of each assembly.



   - Select “Show Least Pull” for lowest tire effects on pulling.

   - Select “Show Least Vibration” for the smoothest ride.

4. Select “Show Alternate Placements” for other configurations.

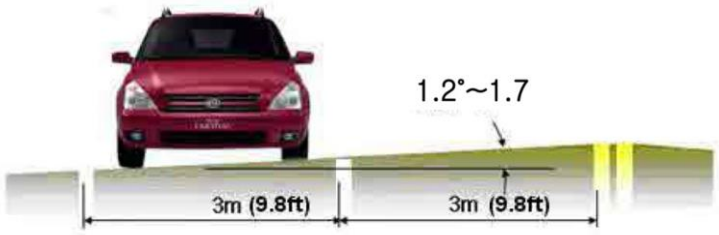


5. **Road Test**

Road Conditions:

Recommendations	- Two or more lane road. - Road needs to go straight at least 656.2ft (200m) a little more than two football fields. - Grade of road: As flat as possible—not to exceed local standards (U.S.A.: 1.2˚~1.7˚), from center to shoulder. Do not test on road with "reverse grade" (from shoulder to center). Width of lane: 9.8~11.5ft (3 ~ 3.5m). Conduct the test on a smooth road without pot holes, broken pavement or rumble strips.
Cautions	- Do not test on the road with excessive grade in any direction. - Conduct the test on a low traffic road.

Example: Typical acceptable road.



6. **Testing Procedure**

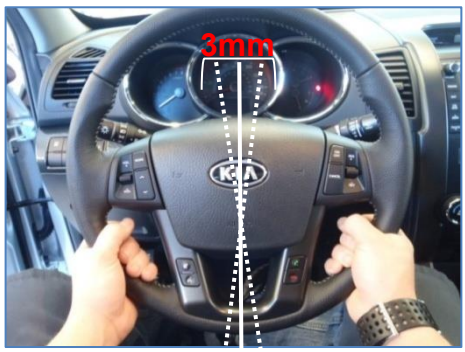
Before attempting a road test, verify that all the tires meet vehicle specifications, remove any accessories on the steering wheel; then adjust the tire inflation pressure to the recommended specification list on the door jamb sticker.

★ NOTICE

For the best accuracy, it is recommended to use the GDS to measure tire pressures under Current Data within TPMS system.

Align the steering wheel to center (level) while driving the vehicle straight at 40mph (60kph) or 50mph (80kph).

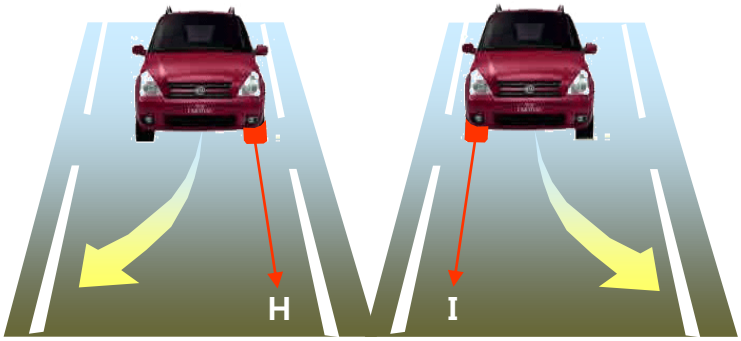
Hold the steering wheel softly and align it to the center, turning it right and left within ± 3mm.



⚠ CAUTION

If the steering wheel is not level while driving straight, this has no connection with the vehicle drifting to one side other than incorrect installation of steering wheel. Correct S/W position and retest.

7. Position the vehicle towards the edge of the right lane and use the right side lane line as a base line (I).



Drift to the right **Drift to the left**

CAUTION

At this time, use only moderate pressure to hold the steering wheel, but do not let it go. Softly but safely hold the steering wheel with your palms. DO NOT ever compromise your safety while performing this test.

Good Hand Position with palms touching the wheel

8. Measure the elapsed time for the left side front tire to move lane lines.

9. **Case #1 and #2 Vehicle Tracking Validation**

NO.	CONDITION	JUDGEMENT
Case 1	The elapsed time for the tire on the opposite side of the base line to reach the opposite lane of the base line is 6 seconds or less @ 40mph (60kph) or 4.5 second or less @ 50mph (80kph).	**Abnormal**
	The vehicle moves about 3.3ft (1m) to left or right side when driving 328.1ft (100m).	**Abnormal**
Case 2	**When it is hard to judge in case #1** The elapsed time for the tire on the base line side to reach the opposite lane line is 9 seconds or less @ 40 mph (3m or 10 ft.)	**Abnormal**

Road Test Case #1 – 3.3 ft	Road Test Case #2 – 10 ft
 Use minimal throttle input and do not vary throttle input during testing	
6 seconds or less at 40 MPH, or 4.5 seconds or less at 50 MPH.	9 seconds or less at 40 MPH, or 7 seconds or less at 50 MPH.

★ NOTICE

If an excessive side wind was blowing during testing, repeat the test again.

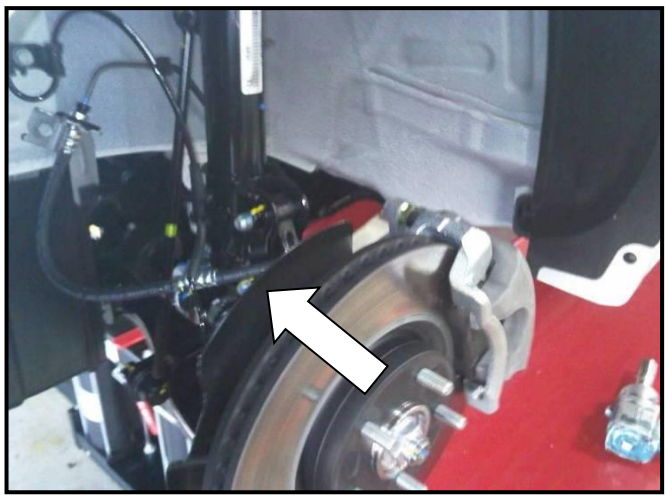
Procedure #1: Adjust Front Struts

1. Raise vehicle and remove the left front wheel & tire assembly, and then slighty loosen strut mounting bolts and nuts without removal.

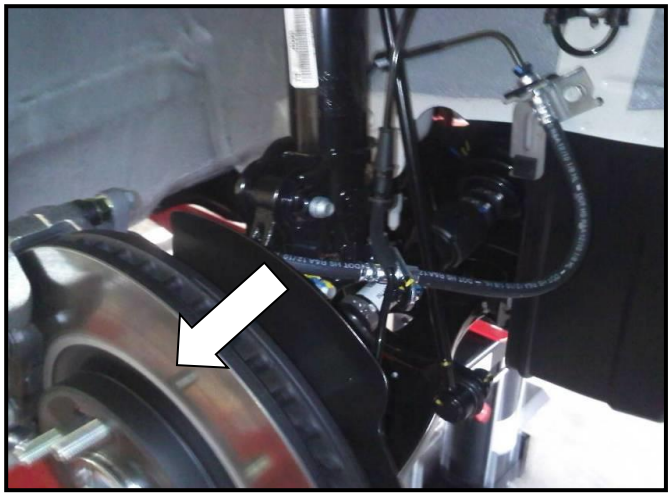
   Wheel Nut Tightening Torque:
   66 ~ 79 lb-ft (89 ~ 107 Nm)

   With the upper part of the brake disc fully pushed inward, retighten the strut mounting bolts.

   Strut Knuckle Tightening Torque:
   116~130 lb-ft (157~176 Nm)



2. Remove the right front wheel & tire assembly and slightly loosen the strut mounting bolts and nuts without removal.



Wheel Nut Tightening Torque:
66 ~ 79 lb-ft (89 ~ 107 Nm)

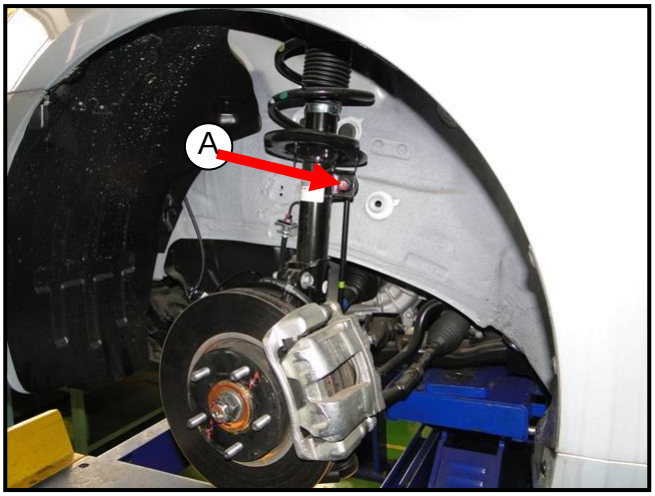
With the upper part of the brake disc fully pushed outward, retighten the strut mounting bolts.

Strut Knuckle Tightening Torque:
116~130 lb-ft (157~176 Nm)

Alignment + MDPS update (reflash) + recalibrate ASP

Procedure #2: Front Strut Assembly Replacement

1. Raise vehicle and remove the left front tire & wheel assembly.



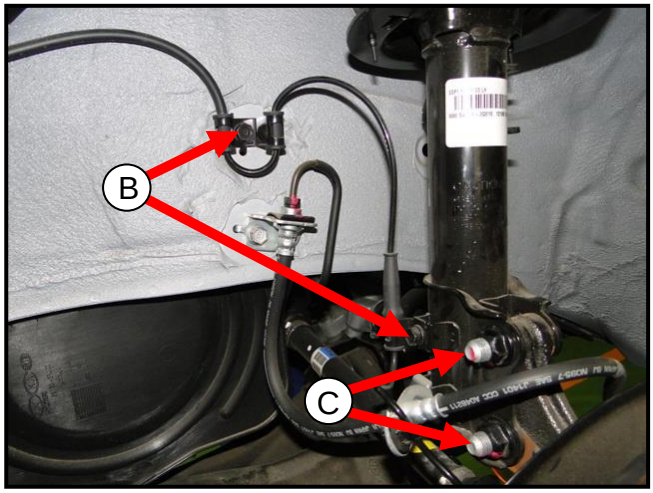
Wheel Nut Tightening Torque:
66 ~ 79 lb-ft (89 ~ 107 Nm)

Remove the left front strut assembly.

Remove the stabilizer link upper mounting nut (A).

Stabilizer Link Tightening Torque:
73 ~ 86 lb-ft (99 ~ 117 Nm)

2. Remove the speed sensor and brake hose brackets (B).

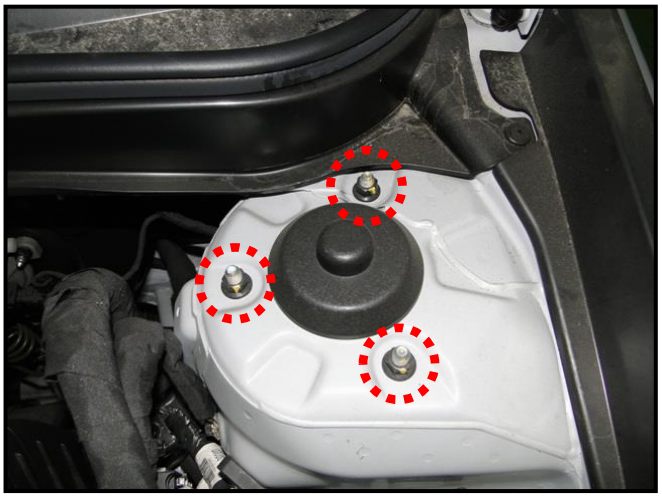


Remove the strut knuckle mounting bolts and nuts (C).

Strut Knuckle Tightening Torque:
116~130 lb-ft (157~176 Nm)

3. Remove the (3) three left front strut upper mounting nuts, and then remove the strut & spring assembly.

Upper Strut Nut Tightening torque:
33 ~ 43 lb-ft (45 ~ 58 Nm)



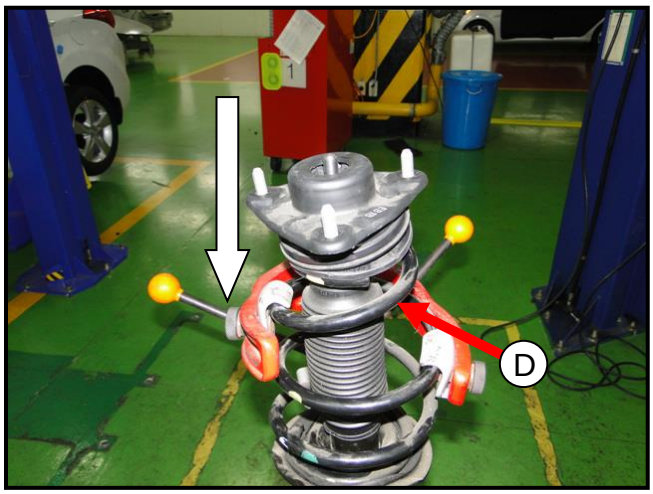
4. Place the removed strut & spring assembly onto SST (09546-26000) as shown on the photo.

Disassemble the left front strut assembly.

Press the coil spring downward (D).

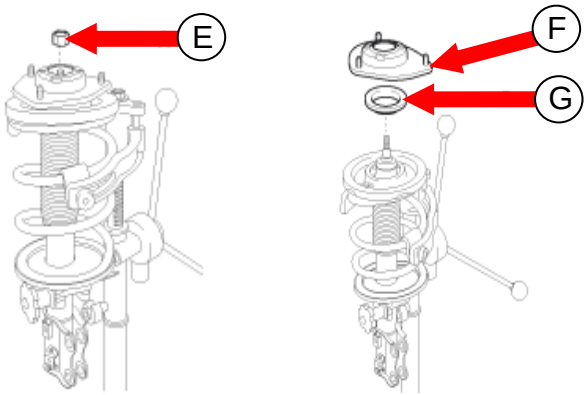
⚠ CAUTION

Be careful that the coil spring is not excessively compressed.



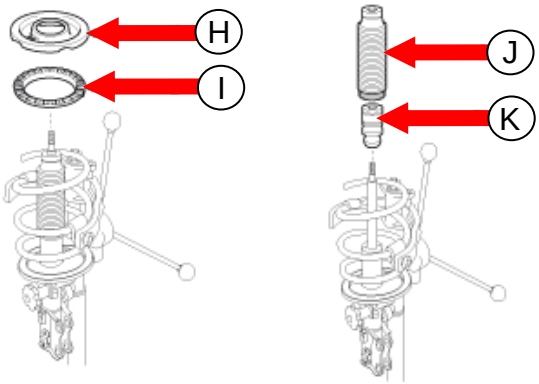
5. Remove the self-locking nut (E).

   Remove the insulator assembly (F) and the strut bearing (G).



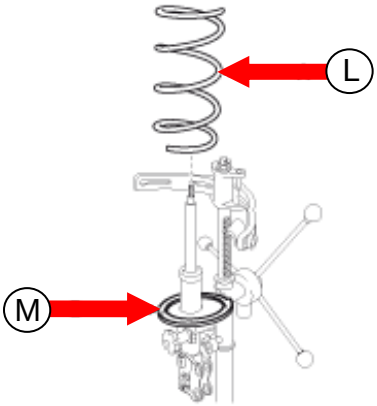
6. Remove the spring upper seat (H) and pad (I).

   Remove the dust cover (J) and the rubber bumper (K).



7. Remove the coil spring (L) and the lower spring pad (M).

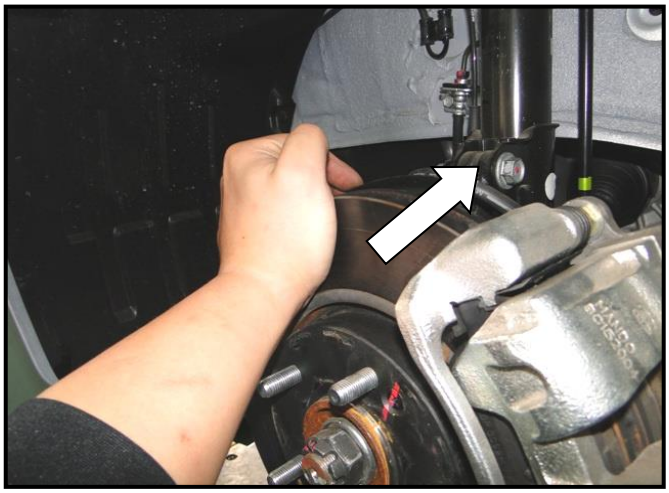
   Remove the left front strut.



8. Assemble the new left front strut and all other removed strut related components in reverse order of disassembly.

9. With the upper part of the brake disc fully pushed toward the strut, re-install the left front strut assembly.

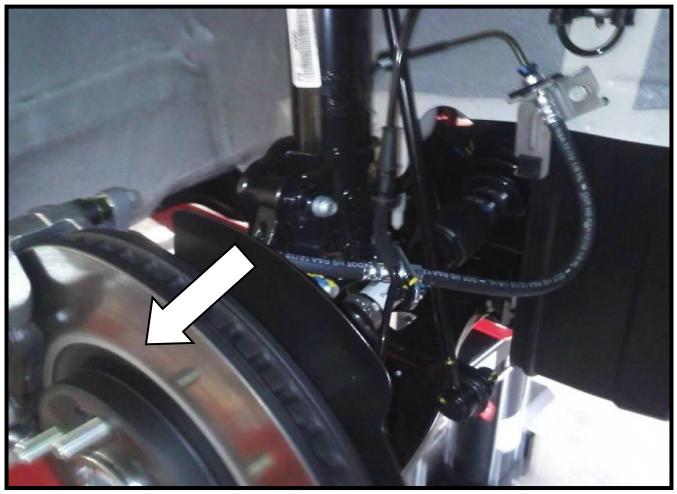
   Reinstall the left front wheel and tire assembly.



10. Repeat steps 1~10 for the right side.

    With the upper of the brake disc fully pushed outward, re-install the right front strut assembly.

    Reinstall the right front wheel and tire assembly.

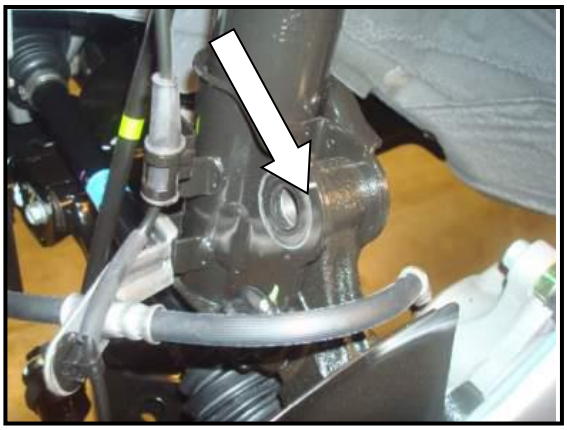


Alignment + MDPS update (reflash) + recalibrate ASP

Procedure #3: Front Camber Bolt Replacement and Wheel Alignment

1. Raise vehicle and remove the right and left front wheel and tire assemblies.

2. Remove upper strut-to-knuckle mounting nut and bolt.

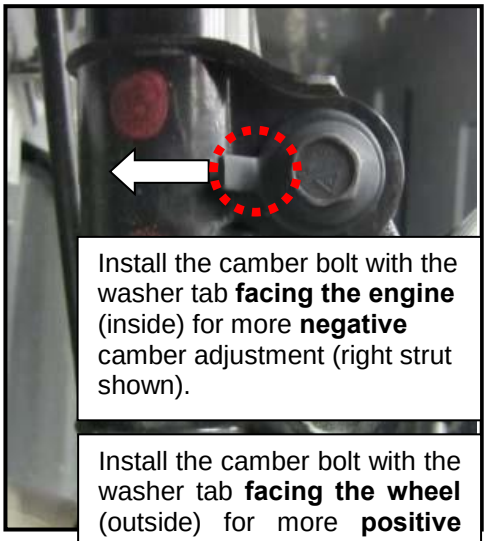


3. Install a service camber bolt in the upper strut-to knuckle hole. Ensure the washer tab is facing the correct direction, according to the desired camber adjustment range.

✶ NOTICE

For more positive camber adjustment, install the bolt with the washer tab facing towards the wheel.

For more negative camber adjustment, install the bolt with the washer tab facing towards the engine.



Install the camber bolt with the washer tab **facing the engine** (inside) for more **negative** camber adjustment (right strut shown).

Install the camber bolt with the washer tab **facing the wheel** (outside) for more **positive** camber adjustment.

4. With both the upper (camber bolt) and lower (factory bolt) strut-to-knuckle bolts slightly loose, turn the camber bolts to adjust the camber to the desired value. Adjust the **cross camber** by the amount shown below, for the tracking result range listed:

Tracking Result* (Case #1, 40 mph)	Cross camber change (left camber minus right camber)
1~4 seconds	0.5° ~ 0.9°
4 ~ 6 seconds	0.0° ~ 0.5°

✶ IMPORTANT

- **The suggested cross camber adjustment values listed in the table are based on the results of Case #1, 40 MPH road testing.**
- The values listed in the table are for cross-camber change, not absolute cross camber.
- **The cross camber value is to be achieved by adjusting the left and right camber values, staying within the individual camber specification tolerance range (-0.5° ± 0.5°). Not to exceed 1° of Cross Camber.**
- For vehicles which track right, adjust the cross camber value more positive.
- For vehicles which track left, adjust the cross camber value more negative.
- Some vehicles may need additional adjustment beyond the suggested range to pass the road test.

5. Tighten both nuts (top and bottom) when the desired camber is achieved.

Strut Knuckle Tightening Torque:
116~130 lb-ft (157~176 Nm)

6. Complete wheel alignment + ASP recalibration

Optima (TF) Alignment Specifications Before 11/29/2011

Item	Left Front	Right Front
Camber Angle	-0.8 ± 0.5°	-0.1 ± 0.5°
Caster Angle	4.44°±0.5°*	4.44°±0.5°
Toe Angle	0.08 ± 0.1°	0.08 ± 0.1°

*Specification shown in standard format. Actual lower limit is 3.64°.

Item	Left Rear	Right Rear
Camber Angle	-1.0°±0.5°	-1.0°±0.5°
Caster Angle	N/A	N/A
Toe Angle	0.085°±0.1°	0.085°±0.1°

Note: Do Not Exceed 1° of Cross Camber

Optima (TF) Alignment Specifications After 11/29/2011

Item	Left Front	Right Front
Camber Angle	-0.8 ± 0.5°	-0.1 ± 0.5°
Caster Angle	3.99° ±0.5°	3.99°± 0.5
Toe Angle	0.08 ± 0.1°	0.08 ± 0.1°

Item	Left Rear	Right Rear
Camber Angle	-1.0°±0.5°	-1.0°±0.5°
Caster Angle	N/A	N/A
Toe Angle	0.085°±0.1°	0.085°±0.1°

Note: Do Not Exceed 1° of Cross Camber

EPS S/W Upgrade Procedure:

Make sure GDS is updated with the most current software version prior to reflash.

To correct this condition, the PCM should be reprogrammed using the GDS download as described in this bulletin.

UPGRADE EVENT NAME
167.TF EPS ECU UPDATE

✶ NOTICE

- **A fully charged battery is necessary before ECM upgrade can take place. It is recommended that the Midtronics GR8-1299 system be used in ECM mode during charging. DO NOT connect any other battery charger to the vehicle during ECM upgrade.**
- **All ECM upgrades must be done with the ignition key in the 'ON' position.**
- **Be careful not to disconnect any cables connected to the vehicle or GDS during the ECM upgrade procedure.**
- **DO NOT start the engine during ECM upgrade.**
- **DO NOT turn the ignition key 'OFF' or interrupt the power supply during ECM upgrade.**
- **When the ECM upgrade is completed, turn the ignition 'OFF' and wait 20 seconds before starting the engine.**
- **ONLY use approved ECM upgrade software designated for the correct model, year.**

ROM ID INFORMATION TABLES :

MODEL	EPS P/N	ECM ROM ID	
		PREVIOUS	NEW
TF	56310-2T300 56310-2T320	**4TFE1004 4TFF1005 4TFG1007 4TFH1009 4TFJ1009 4TFK1103**	**4TFN1105**
	56310-2T301 56310-2T321	**4TFL1104 4TFM1104**	

To verify the vehicle is affected, be sure to check the Calibration Identification of the vehicle's ECM ROM ID and reference the Information Table as necessary.

1. Connect the power supply cable to the GDS tool.

✶ NOTICE

If attempting to perform the ECM upgrade with the power supply cable disconnected from the GDS tool, be sure to check that the GDS tool is fully charged before ECM upgrade. If the GDS tool is not fully charged, failure to perform the ECM upgrade may occur. Therefore, it is strongly recommended that the power supply connector be connected to the GDS tool.

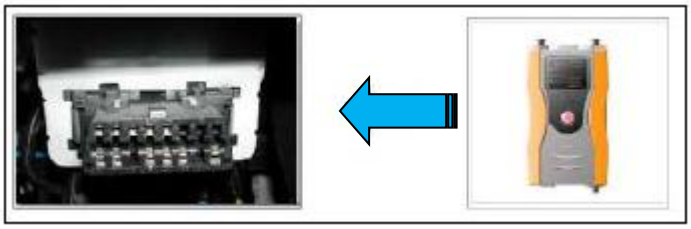
2. Connect the USB cable between the VCI and the GDS tool.

✶ NOTICE

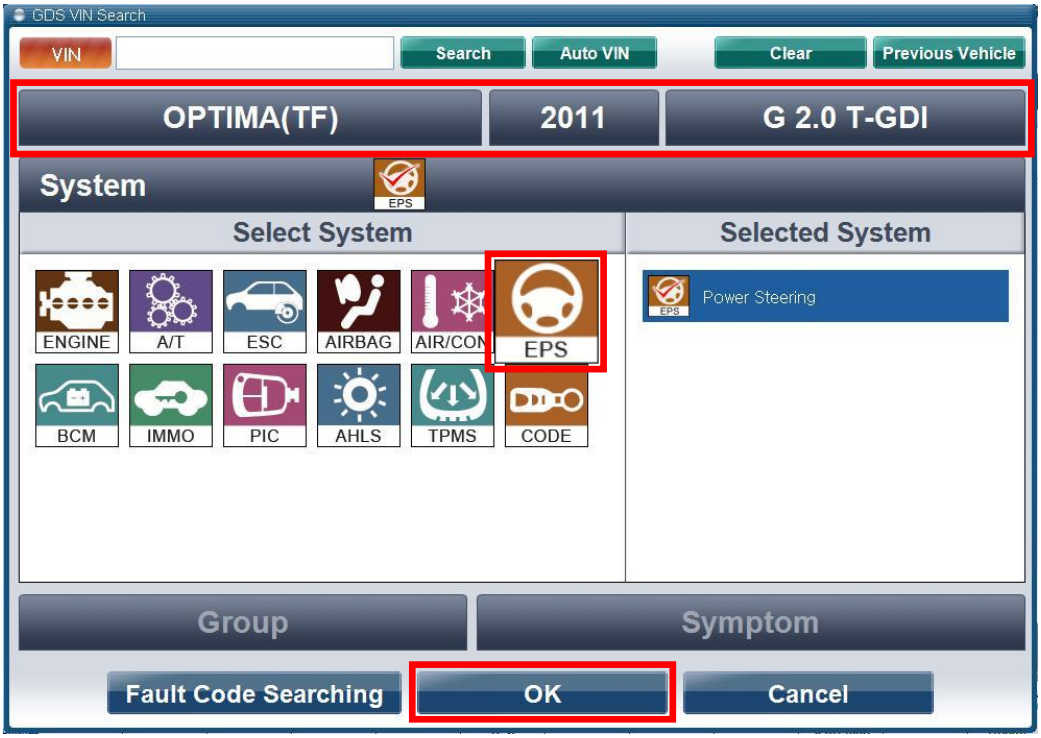
When performing the ECM upgrade using the GDS tool, wireless communication between the VCI and GDS tool is not available. Therefore, be sure to connect the USB cable between the VCI and the GDS tool.

3. Connect the Main 16-pin DLC cable (GHDM – 241000) to the VCI.

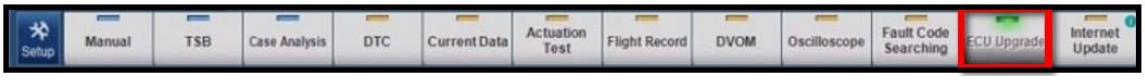
4. Connect the Main 16-pin DLC cable (GHDM – 241000) to the OBD-II connector, located under the driver's side of the instrument panel.



5. With the ignition key ON, turn ON the VCI and GDS tool. Access the GDS vehicle identification number (VIN) screen and configure the vehicle using the VIN AUTO DETECT Function.



6. Enter the vehicle information by pressing the **VIN Auto Detect** button, entering the vehicle's VIN or selecting the vehicle model, model year, engine/fuel type and **EPS** as the system and then click **OK**.



7. Select **ECU Upgrade** on the initial screen after entering the vehicle information

8. Select **Auto Mode** then **EPS** in the left **ECU Upgrade** column.

9. Read Preparation and click **OK**.

10. The GDS will read the vehicle's ROM ID.

11. After the **Current ROM ID** is displayed, select appropriate **Upgrade Event, "167.TF EPS ECU UPDATE."**

12 After clicking the **Upgrade button**, read Information then click **OK**.

13. Upgrade will begin and the progress of the upgrade will appear on the bar graph.

14. Upgrade will occur until 100% is reached on the bar graph. Turn the ignition key OFF for 10 seconds, place it back in the ON position and then click **OK** to continue according to **Information** displayed on the screen.

15. Click **OK** on the final screen, which indicates upgrade is complete.

16. Check if any incidental Diagnostic Trouble Codes DTC(s) have been created by the upgrade process; clear any DTC(s) that may be present.

Manual Upgrade Procedure:

*** NOTICE**

Do NOT attempt to perform a Manual Mode upgrade unless Auto Mode fails. Always follow the instructions given on the GDS tool in either Auto or Manual mode. See table for Manual Mode passwords.

*** MANUAL MODE ECM UPGRADE PASSWORDS:**

Upgrade Event #167

MENU	PASSWORD
TF EPS : 56310-2T300/301/320/321	**2321**

1. Within the **ECU Upgrade** screen, select **Manual Mode** in the left column, then select the appropriate **Upgrade Event #167.** Select the appropriate control unit part number with reference to the ROM ID Information Table and click **OK**.

2. Enter the appropriate password from the below table then click **OK**.

3. Upgrade will begin and the progress of the upgrade will appear on the bar graph.

4. Upgrade will occur until 100% is reached on the bar graph. Turn the ignition key OFF for 10 seconds, place it back in the ON position and then click **OK** to continue according to **Information** displayed on the screen.

   Click **OK** on the final screen, which indicates upgrade is complete.

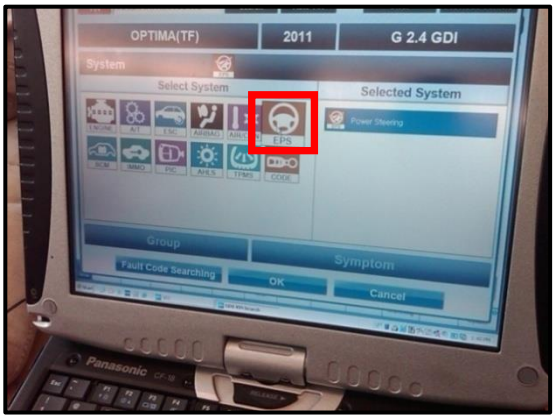
5. Check if any incidental Diagnostic Trouble Codes DTC(s) have been created by the upgrade process; clear any DTC(s) that may be present.

SUBJECT: OPTIMA (TF) VEHICLE TRACKING DIAGNOSIS & REPAIR

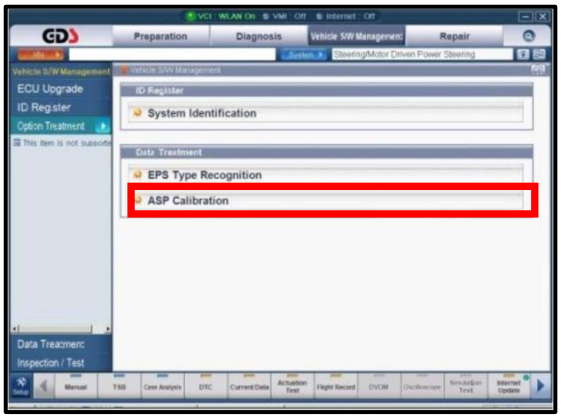
ASP: Absolute Steering Position Recalibration Procedure

1. Steering wheel Absolute Steering Position (ASP) calibration procedure is performed using the GDS.

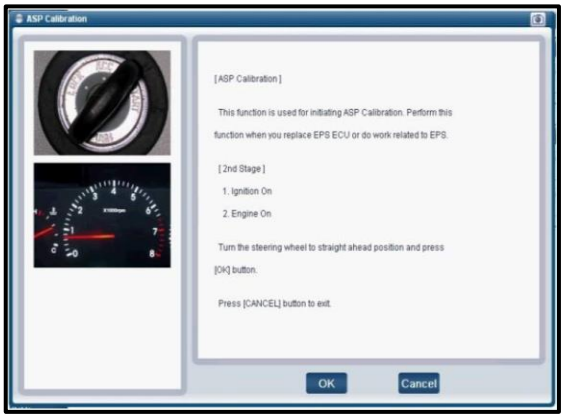
   Steering wheel Absolute Steering Position (ASP) calibration is required after each alignment adjustment.



2. Connect GDS to vehicle and select model, model year, and engine. Then select Absolute Steering Position (ASP) Calibration function and follow prompts.



3. With the Steering wheel straight in the level position, reset steering Absolute Steering Position (ASP) preferably done after front toe adjustment,observing the Steering Angle Sensor reading changes on GDS to ‘0’ degree.



AFFECTED VEHICLE PRODUCTION RANGE:

Model	Production Date Range
Optima (TF)	September 1, 2010 ~ August 31, 2011

SUBJECT: OPTIMA (TF) VEHICLE TRACKING DIAGNOSIS & REPAIR

REQUIRED PARTS:

Engine / Tire	Part Name	Part No.	Figure
2.4 GDI / 16, 17” 2.0T - GDI / 17”	LH: Strut Assembly	54651 2T121	
	RH: Strut Assembly	54661 2T121	
2.0T - GDI / 18”	LH: Strut Assembly	54651 2T221	
	RH: Strut Assembly	54661 2T221	
All (use only after May 31st production)	Camber Bolt and Washer (Qty 2 per Box)	546993 Q000FFF	

WARRANTY CLAIM INFORMATION:

Claim Type	Causal P/N	Qty.	N Code	C Code	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
W	54651 2T121 (16”, 17”) 54651 2T221 (18”)	0 0	N31	C40	(CHA 034) Road Test	54651F03	0.3 M/H	NONE	0
W	54651 2T121 (16”, 17”) 54651 2T221 (18”)	0 0	N31	C40	(CHA 034) Road Test + Correct Off Center Steering	54651F04	1.2 M/H	NONE	0
W	54651 2T121 (16”, 17”) 54651 2T221 (18”)	0 0	N31	C40	(CHA 034) Straight Track (Road Force Balance 4 Tires + 2 Road test	54651F05	1.1 M/H	NONE	0
W	54651 2T121 (16”, 17”) 54651 2T221 (18”)	0 0	N31	C40	(CHA 034) Straight Track (Road Force Balance 4 Tires + **Strut Adjustment** + Alignment + EPS Update + ASP + 3 Road Tests	54651F06	2.8 M/H	NONE	0
W	54651 2T121 (16”, 17”)	1	N31	C40	(CHA 034) Straight Track (Road Force Balance 4 Tires + **Strut Replacement** + Alignment + EPS Update + ASP + 3 Road Tests	54651F07	4.3 M/H	54661 2T121	1
	54651 2T221 (18”)	1						54661 2T221	1
W	54651 2T121 (16”, 17”) 54651 2T221 (18”)	0 0	N31	C40	(CHA 034) Straight Track (Road Force Balance 4 Tires + **Camber Bolt Installment** + Alignment + ASP + 3 Road tests	54651F08	4.2 M/H	NONE	1

Only one op code can be claimed

* Procedures 54651F07 or 54651F08 **should not** be performed on vehicles produced on or after Feb. 25, 2011 for 18" wheels and March 10, 2011 for 16" & 17" wheels since the newly improved struts have already been applied.

* Procedures 54651F06 or 54651F07 **should not** be performed on vehicles produced on or after June 1, 2011 since the EPS ECU software update has already been applied.