

2008 Ford Mustang

2008 GENERAL INFORMATION Suspension System - General Information - Mustang

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SPECIFICATIONS

ALIGNMENT SPECIFICATIONS

Item	LH	RH	Total/ Split
Front			
Camber	$-0.75^{\circ} \pm 0.75^{\circ}$	$-0.75^{\circ} \pm 0.75^{\circ}$	$0^{\circ} \pm 0.75^{\circ}$
Caster	$7.1^{\circ} \pm 0.75^{\circ}$	$7.1^{\circ} \pm 0.75^{\circ}$	$0^{\circ} \pm 0.75^{\circ}$
Toe (positive value is toe-in, negative value is toe-out)	-	-	$0.10 \pm 0.20^{\circ}$

GENERAL SPECIFICATIONS

Item	Specification
Ball Joint Deflection	
Lower ball joint	0-0.3 mm (0-0.012 in)
Dogtracking	
Clear vision (negative value is counterclockwise)	$0^{\circ} \pm 3^{\circ}$
Maximum	13 mm (0.5 in)
Front Ride Height	
Mustang - Front	37 mm $\pm$ 8 mm (1.5 in $\pm$ 0.3 in)
Shelby GT 500 Coupe - Front	34 mm $\pm$ 8 mm (1.3 in $\pm$ 0.3 in)
Shelby GT 500 Convertible - Front	35 mm $\pm$ 8 mm (1.4 in $\pm$ 0.3 in)
Rear Ride Height	
Mustang Convertible - Rear	118 mm $\pm$ 8 mm (4.6 in $\pm$ 0.3 in)
Mustang Coupe - Rear	115 mm $\pm$ 8 mm (4.5 in $\pm$ 0.3 in)
Shelby GT 500 Coupe - Rear	112 mm $\pm$ 8 mm (4.4 in $\pm$ 0.3 in)
Shelby GT 500 Convertible - Rear	116 mm $\pm$ 8 mm (4.6 in $\pm$ 0.3 in)

TORQUE SPECIFICATIONS

Description	Nm	lb-ft
Brake line bracket bolt	20	15
Lower control arm rear inboard cam nut	185	136
Strut-to-wheel spindle cam nut	200	148

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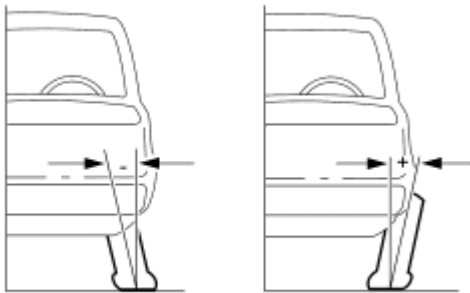
Strut-to-wheel spindle upper bolt	200	148
Tie-rod jam nut	55	41
Wheel speed sensor bolt	15	11

DESCRIPTION AND OPERATION

WHEEL ALIGNMENT ANGLES

Camber and toe are adjustable on the front suspension systems. Front camber is adjusted through the use of a service repair kit (3C396). Caster is preset at the factory and should only be adjusted, through the use of a service repair kit (3C396), after all other possible sources have been inspected and corrected as necessary. Front toe is adjusted by the use of the front wheel spindle tie rod.

Camber

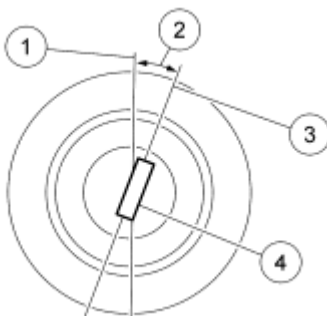


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Fig. 1: Camber (Viewed from Front)
Courtesy of FORD MOTOR CO.

Camber is the vertical tilt of the wheel when viewed from the front. Camber can be positive or negative and has a direct effect on tire wear.

Caster



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Fig. 2: Caster
Courtesy of FORD MOTOR CO.

Item	Description
1	True vertical
2	Positive caster angle
3	Strut centerline
4	Pivot centerline

Caster is the deviation from vertical of an imaginary line drawn through the pivot points (top of strut and lower ball joint), when viewed from the side. The caster **SPECIFICATIONS** will give the vehicle the best directional stability characteristics when loaded and driven. The caster setting is not related to tire wear.

Toe



Fig. 3: Identifying Positive Toe (Toe In)
Courtesy of FORD MOTOR CO.

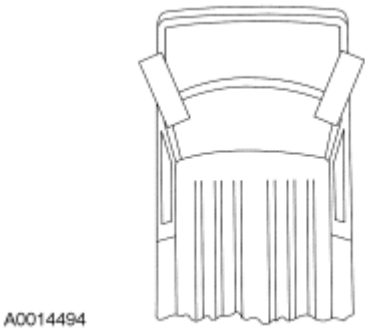
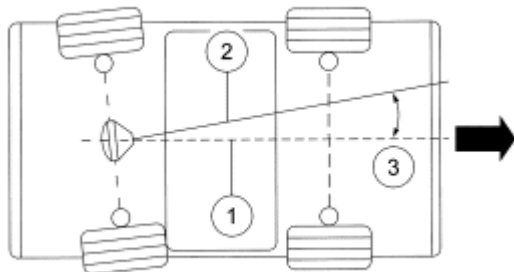


Fig. 4: Identifying Negative Toe (Toe Out)
Courtesy of FORD MOTOR CO.

The vehicle toe setting affects tire wear and directional stability.

Incorrect Thrust Angle (Dogtracking)



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Fig. 5: Identifying Thrust Angle (Dog Tracking)
 Courtesy of FORD MOTOR CO.

Item	Description
1	Vehicle centerline
2	Axle centerline
3	Thrust angle

Incorrect thrust angle (also known as dogtracking) is the condition in which the rear axle is not square to the chassis. Heavily crowned roads can give the illusion of dogtracking.

Wander

Wander is the tendency of the vehicle to require frequent, random left and right steering wheel corrections to maintain a straight path down a level road.

Shimmy

Shimmy, as observed by the driver, is large, consistent, rotational oscillations of the steering wheel resulting from large, side-to-side (lateral) tire/wheel movements.

Shimmy is usually experienced near 64 km/h (40 mph), and can begin or be amplified when the tire contacts pot holes or irregularities in the road surface.

Nibble

Sometimes confused with shimmy, nibble is a condition resulting from tire interaction with various road surfaces and observed by the driver as small rotational oscillations of the steering wheel. For wheel and tire diagnosis, refer to **WHEELS AND TIRES** article.

Poor Returnability/Sticky Steering

Poor returnability and sticky steering is used to describe the poor return of the steering wheel to center after a turn or steering correction is completed.

Drift/Pull

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Pull is a tugging sensation, felt in the steering wheel, that must be overcome to keep the vehicle going straight.

Drift describes what a vehicle with this condition does with hands off the steering wheel.

- Drift/pull may be induced by conditions external to the vehicle (that is, wind, road camber).

Poor Groove Feel - Poor groove feel is characterized by little or no buildup of turning effort felt in the steering wheel as the wheel is rocked slowly left and right within very small turns around center or straight-ahead (under 20 degrees of steering wheel turn). Efforts may be said to be "flat on center."

- Under 20 degrees of turn, most of the turning effort that builds up comes from the mesh of gear teeth in the steering gear. In this range, the steering wheel is not yet turned enough to feel the effort from the self-aligning forces at the road wheel or tire patch.
- In the diagnosis of a handling problem, it is important to understand the difference between wander and poor groove feel.

DIAGNOSTIC TESTS

SUSPENSION SYSTEM

Inspection and Verification

1. Road test the vehicle.
 - If any suspension alignment or ride height concerns are present, go to **Symptom Chart - Suspension System**.
 - Verify the customer concern by carrying out a road test on a smooth road. If any vibrations are present, go to **NVH**.
2. Inspect the tires.
 - Check the tire pressures with all normal loads in the vehicle and the tires cold. Refer to the Vehicle Certification (VC) label.
 - Verify that all tires are sized to specification. Refer to the VC label.
 - Inspect the tires for incorrect wear and damage. Install new tires as necessary.
3. Inspect the chassis and underbody.
 - Remove any excessive accumulation of mud, dirt or road deposits from the chassis and underbody.
4. Inspect for aftermarket equipment.
 - Check for aftermarket changes to the steering, suspension, and wheel and tire components (such as competition or heavy duty). The **SPECIFICATIONS** article do not apply to vehicles equipped with aftermarket equipment.

VISUAL INSPECTION CHART

Mechanical
• Front or rear suspension components • Suspension fastener(s)

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- Incorrect spring usage
- Spring(s)
- Shock absorber(s)
- Strut(s)
- Suspension bushing(s)
- Steering system components
- Wheel bearing(s)
- Non-OEM parts or modifications

5. If an obvious cause for an observed or reported condition is found, correct the cause (if possible) before proceeding to the next step.
6. If the fault is not visually evident, go to **Symptom Chart - Suspension System** or Go to **NVH**.

Symptom Chart - Suspension System

Symptom Chart - Suspension System

Condition	Possible Sources	Action
• Incorrect thrust angle (dogtracking)	• Rear suspension components	• INSPECT the rear suspension system. CHECK the rear alignment for the correct thrust angle. REPAIR or INSTALL new suspension components as necessary. REFER to <u>REAR SUSPENSION</u> article.
• Vehicle drifts/pulls	• Unevenly loaded or overloaded vehicle • Tires/tire pressure • Alignment is not within specification • Brake drag • Steering components	• Go to <u>Pinpoint Test A</u>.
• Front bottoming or riding low	• Worn, damaged or incorrect springs • Worn front strut(s)	• MEASURE the ride height. REFER to <u>Ride Height Measurement</u>. INSTALL new springs as necessary. REFER to <u>FRONT SUSPENSION</u> article. • If the ride height is OK, INSTALL new struts as necessary. REFER to <u>FRONT SUSPENSION</u> article.

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Abnormal/incorrect tire wear	- Incorrect tire pressure (rapid center rib or inner and outer edge wear) - Incorrect tire rotation intervals - High-speed cornering - Excessive front or rear toe (inner or outer edge wear) - Alignment out of specification (inner or outer edge wear)	REFER to <u>WHEELS AND TIRES</u> article Diagnosis and Testing for further tire wear diagnosis.
Poor returnability/sticky steering	- Front or rear suspension components - Damaged or worn front strut mount bearing(s) - Binding ball joints - Steering components - Caster out of specification	- INSPECT the front and rear suspension system. REPAIR or INSTALL new suspension components as necessary. REFER to <u>FRONT SUSPENSION</u> article for front suspension or <u>REAR SUSPENSION</u> article for rear suspension. - INSTALL a new front strut mount bearing(s) as necessary. REFER to <u>FRONT SUSPENSION</u> article. - REFER to the Ball Joint Inspection <u>Component Tests</u>. - INSPECT the steering system. INSTALL new components as necessary. REFER to <u>POWER STEERING</u> article. - CHECK the wheel alignment. REFER to <u>Caster Adjustment - Front</u>. ADJUST as necessary.
Steering wheel off-center	- Unequal front toe setting (side-to-side) - Steering components	- CHECK the wheel alignment. REFER to <u>Toe Adjustment - Front</u>. ADJUST as necessary. - INSPECT the steering system. INSTALL new components as necessary. REFER to <u>Component Tests</u> in

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- Sway or roll

- Overloaded, unevenly or incorrectly loaded vehicle

- Loose wheel nut(s)

- Strut(s) or shock absorber(s)

- Loose stabilizer bracket-to-frame bolts

- Worn stabilizer bar bushings or links

- Damaged or broken stabilizer bar

- Damaged spring(s)

- Vehicle leans to one side

- Unevenly loaded or overloaded vehicle

- Front or rear

STEERING SYSTEM - GENERAL INFORMATION article.

- NOTIFY the customer of incorrect vehicle loading.
- TIGHTEN the wheel nut(s) to specification. REFER to **WHEELS AND TIRES** article.
- INSTALL new struts or shock absorbers as necessary. REFER to **FRONT SUSPENSION** article for front suspension or **REAR SUSPENSION** article for rear suspension.
- TIGHTEN the bolts to specification. REFER to **FRONT SUSPENSION** article.
- INSTALL new stabilizer bar bushings or links as necessary. REFER to **FRONT SUSPENSION** article.
- INSTALL a new stabilizer bar as necessary. REFER to **FRONT SUSPENSION** article.
- MEASURE the ride height. REFER to **Ride Height Measurement**.
- INSTALL new springs as necessary. REFER to **FRONT SUSPENSION** article for front suspension or **REAR SUSPENSION** article for rear suspension.
- NOTIFY the customer of incorrect vehicle loading.
- INSPECT the front and rear suspension systems. INSTALL new suspension components as necessary.

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Wander	suspension components - Incorrect ride height. Side-to-side lean out of specification - Overloaded, unevenly or incorrectly loaded vehicle - Ball joint(s) - Damaged or missing front strut mount bearing(s) - Loose, worn or damaged front wheel bearing(s) - Steering components - Wheel alignment (excessive total front toe out)	REFER to <u>FRONT SUSPENSION</u> article for front suspension or <u>REAR SUSPENSION</u> article for rear suspension. - MEASURE the ride height. REFER to <u>Ride Height Measurement</u>. INSPECT the front and rear suspension systems. REPAIR or INSTALL new components as necessary. REFER to <u>FRONT SUSPENSION</u> article for front suspension or <u>REAR SUSPENSION</u> article for rear suspension. - NOTIFY the customer of incorrect vehicle loading. - INSPECT the ball joints. REFER to the Ball Joint Inspection <u>Component Tests</u>. - INSTALL a new front strut mount bearing(s) as necessary. REFER to <u>FRONT SUSPENSION</u> article. - INSPECT the wheel bearings. INSTALL new wheel bearings as necessary. - INSPECT the steering system. INSTALL new components as necessary. REFER to <u>STEERING SYSTEM - GENERAL INFORMATION</u> article. - ADJUST as necessary. REFER to <u>Toe Adjustment - Front</u>.
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Symptom Chart - NVH

NOTE: NVH symptoms should be identified using the diagnostic tools that are available. For a list of these tools, an explanation of their uses and a glossary of common terms, refer to **NOISE, VIBRATION AND HARSHNESS** article. Since it is

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possible any one of multiple systems may be the cause of a symptom, it may be necessary to use a process of elimination type of diagnostic approach to pinpoint the responsible system. If this is not the causal system for the symptom, refer back to **NOISE, VIBRATION AND HARSHNESS** article for the next likely system and continue diagnosis.

Symptom Chart - NVH

Condition	Possible Sources	Action
Squeak or grunt - noise from the front or rear suspension, occurs more in cold ambient temperatures. More noticeable over rough roads or when turning	- Front stabilizer bar insulators - Rear stabilizer bar insulators	Under these conditions, the noise is acceptable. CHECK TSBs.
Clunk - noise from the front suspension, occurs in and out of turns	Loose front suspension	INSPECT for loose nuts or bolts. TIGHTEN to specifications. REFER to <u>FRONT SUSPENSION</u> article for front suspension.
Clunk - noise from the rear suspension, occurs when shifting from REVERSE to drive	Loose rear suspension components	INSPECT for loose or damaged rear suspension components. REPAIR or INSTALL new components as necessary. REFER to <u>REAR SUSPENSION</u> article.
Click or pop - noise from the front suspension. More noticeable over rough roads or over bumps	Worn or damaged ball joint(s)	CARRY OUT a ball joint inspection. INSTALL new ball joint(s) or control arm(s) as necessary. REFER to <u>FRONT SUSPENSION</u> article.
Squeak, creak or rattle noise. Occurs mostly over bumps or rough roads	- Front or rear suspension components - Loose or damaged front struts, shock absorber (s) or shock absorber bushing(s) - Damaged spring or spring mount(s) - Damaged or worn control/radius arm bushing(s) - Worn or damaged stabilizer bar bushings	INSPECT the front and rear suspension. INSTALL new components as necessary. REFER to <u>FRONT SUSPENSION</u> article for front suspension or <u>REAR SUSPENSION</u> article for rear suspension.

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	or link(s)	
• Shudder - occurs during acceleration from a slow speed or stop	• Incorrect ride height causing incorrect driveline angle	• REFER to <u>DRIVELINE SYSTEM - GENERAL INFORMATION</u> article for driveline angle diagnosis.
• Shimmy • Shimmy - most noticeable on coast/deceleration. Also hard steering condition	• Loose wheel nut(s) • Loose front suspension fastener(s) • Worn front wheel bearing(s) • Strut(s) or shock absorber(s) • Excessive positive caster	• TIGHTEN the nut(s) to specification. REFER to <u>WHEELS AND TIRES</u> article. • TIGHTEN the fastener(s) to specification. REFER to <u>FRONT SUSPENSION</u> article. • INSPECT the front wheel bearing(s). INSTALL new bearing(s) as necessary. REFER to <u>FRONT SUSPENSION</u> article. • INSTALL new struts or shock absorbers as necessary. REFER to <u>FRONT SUSPENSION</u> article for front suspension or <u>REAR SUSPENSION</u> article for rear suspension. • CHECK the wheel alignment. REFER to <u>Caster Adjustment - Front.</u> ADJUST as necessary.
• Rough/harsh ride	• Incorrect tire pressure • Strut(s) or shock absorber(s)	• ADJUST the tire pressure. REFER to the Vehicle Certification (VC) label. • INSTALL new struts or shock absorbers as necessary. REFER to <u>FRONT SUSPENSION</u> article for front suspension or <u>REAR SUSPENSION</u> article for rear suspension. • INSPECT for broken springs. MEASURE the ride height. REFER to <u>Ride Height Measurement.</u> INSTALL new springs as necessary.

	• Spring(s) • Damaged suspension component(s)	REFER to <u>FRONT SUSPENSION</u> article for front suspension or <u>REAR SUSPENSION</u> article for rear suspension. • INSTALL new suspension component(s) as necessary. REFER to <u>FRONT SUSPENSION</u> article for front suspension or <u>REAR SUSPENSION</u> article for rear suspension.
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Pinpoint Tests

Pinpoint Test A: Vehicle Drifts/Pulls

This pinpoint test is intended to diagnose the following:

- Unevenly loaded vehicle
- Tire pressure
- Tire forces
- Brake drag
- Incorrect vehicle alignment
- Steering system

PINPOINT TEST A: VEHICLE DRIFTS/PULLS

A1 CHECK FOR UNEVENLY LOADED VEHICLE

- Visually check the vehicle for an uneven loading condition.
- **Is the vehicle unevenly loaded?**
YES : ADVISE the customer of uneven loading condition.
NO : Go to A2.

A2 CHECK THE TIRE PRESSURES AND TIRE CONDITIONS

- Check the tire pressures. Refer to the Vehicle Certification (VC) label located on the driver door jamb. Check the tires for uneven/abnormal wear. Refer to Diagnosis and Testing-Wheels and Tires in **WHEELS AND TIRES** article.
- **Are the tire pressures and tire conditions OK?**
YES : Go to A3.
NO : ADJUST the tire pressures to the specified pressure or INSTALL new tires as necessary.

A3 ISOLATE TIRE DRIFT/PULL CONDITION

NOTE: It is important to determine if tire forces are the cause of a drift/pull

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condition. Changing the position of the wheel and tire assemblies on the vehicle may correct a pull/drift condition, however the tire drift/pull may return if the wheel and tire assemblies are repositioned during future service. A tire or tires that are causing a drift/pull should not be removed from service unless it has been determined that the tire(s) are worn beyond specification. Refer to Diagnosis and Testing - Wheels and Tires in WHEELS AND TIRES article.

- Cross the front wheel and tire assemblies from left-to-right. Refer to WHEELS AND TIRES article.

- **Does the vehicle drift/pull?**

YES : If the vehicle drifts/pulls in the opposite direction, tire forces are causing the drift/pull. ROTATE the wheel and tire assemblies from front-to-rear. REFER to WHEELS AND TIRES article. If the vehicle drifts/pulls in the same direction, go to A4.

NO : Tire forces were causing the drift/pull and the concern has been corrected.

A4 CHECK FOR BRAKE DRAG

- Spin all 4 wheel and tire assemblies by hand and check for brake drag.
- **Do the wheels spin freely?**

YES : Go to A5.

NO : REFER to BRAKE SYSTEM - GENERAL INFORMATION article to diagnose brake drag condition.

A5 CHECK THE WHEEL ALIGNMENT

- Using alignment equipment and the manufacturers instructions, check the wheel alignment.
- **Is the wheel alignment out of specification?**

YES : ADJUST the alignment as necessary. REFER to GENERAL PROCEDURES.

NO : REFER to STEERING SYSTEM - GENERAL INFORMATION article to diagnose steering system drift/pull/wander condition.

Component Tests

Ball Joint Inspection

1. Prior to inspecting the ball joints for wear, inspect the wheel bearings. Install a new wheel bearing as necessary. Refer to FRONT SUSPENSION article.

NOTE: In order to obtain accurate measurements, the suspension must be in full rebound with the weight of the vehicle supported by the frame.

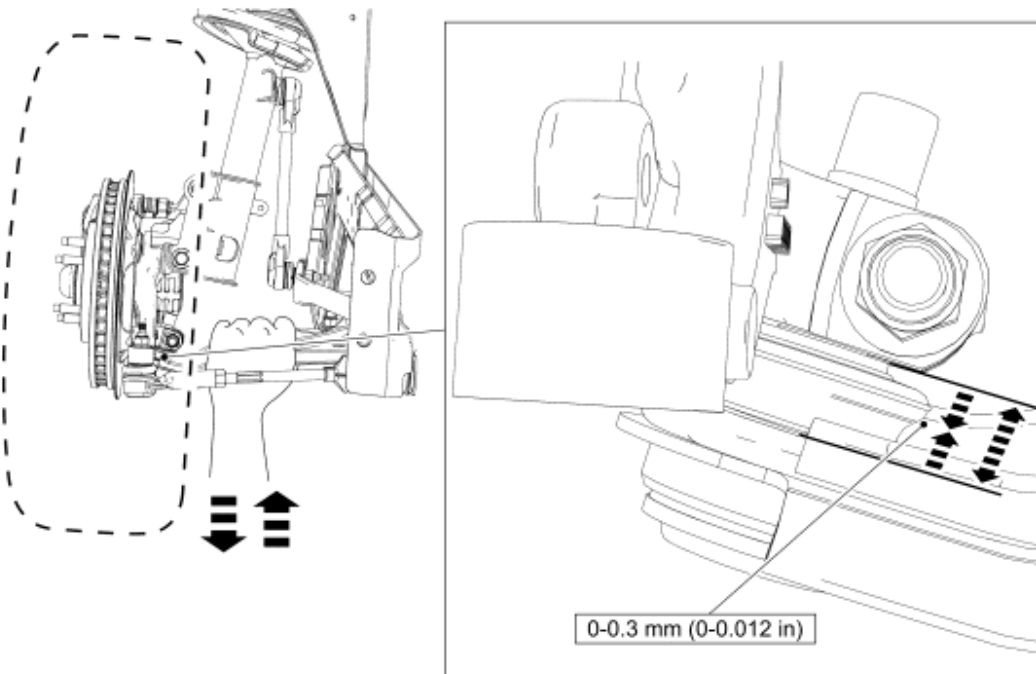
2. Raise and support the vehicle by the frame to allow the wheels to hang in the rebound position.
3. Inspect the ball joint and ball joint boot for damage.
 - If the ball joint or ball joint boot is damaged, install a new ball joint as necessary. Refer to FRONT SUSPENSION article.

NOTE: Do not use any tools or equipment to move the wheel and tire assembly or suspension components while checking for relative movement. Suspension damage may occur. The use of tools or equipment will also create relative movement that may not exist when using hand force. Relative movement must be measured using hand force only.

4. Inspect the ball joint for relative movement by alternately pulling downward and pushing upward on the lower control arm by hand. Note any relative vertical movement between the wheel knuckle and lower arm at the lower ball joint.
 - If relative movement is not felt or seen, the ball joint is OK. Do not install a new ball joint.
 - If relative movement is found, continue with Step 5.

NOTE: In order to obtain an accurate measurement, the dial indicator should be aligned as close as possible with the vertical axis (center line) of the ball joint.

5. To measure ball joint deflection, attach a suitable dial indicator with a flexible arm between the lower control arm and the wheel knuckle or ball joint stud.



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Fig. 6: Checking Ball Joint Deflection
Courtesy of FORD MOTOR CO.

6. Measure the ball joint deflection while an assistant pushes up and pulls down on the lower control arm, by hand.
 - If the deflection exceeds the specification, a new ball joint must be installed. Refer to **FRONT**

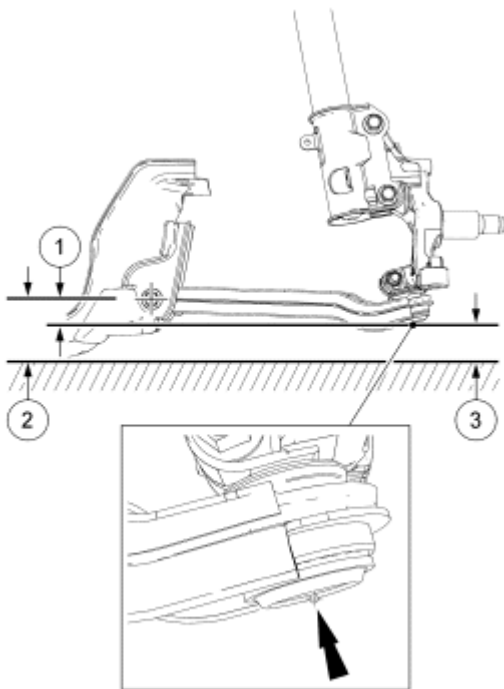
SUSPENSION article.

- If the deflection meets the specification, no further action is required.

GENERAL PROCEDURES

RIDE HEIGHT MEASUREMENT

Front Ride Height Measurement



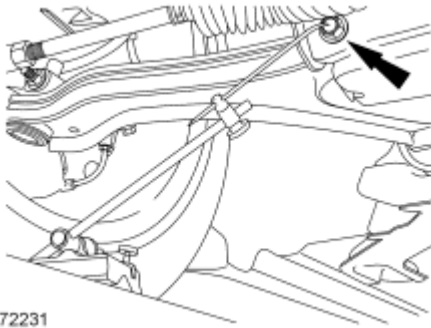
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Fig. 7: Front Ride Height Measurement
Courtesy of FORD MOTOR CO.

Item	Description
1	Ride height = 2 - 3
2	Measurement 2
3	Measurement 3

NOTE: Make sure that the vehicle is positioned on a flat, level surface and the tires are inflated to the correct pressure. Vehicle should have a full tank of fuel.

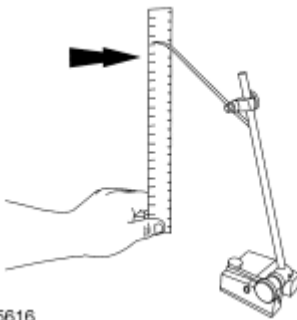
1. Position a suitable surface gauge (such as Starrett 57D Surface Gauge), on a flat, level surface and adjust the gauge's arm until the scribe point is located in the center of the lower control arm forward bolt.
 - Lock the surface gauge in this position.



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Fig. 8: Locating Lower Control Arm Forward Bolt
Courtesy of FORD MOTOR CO.

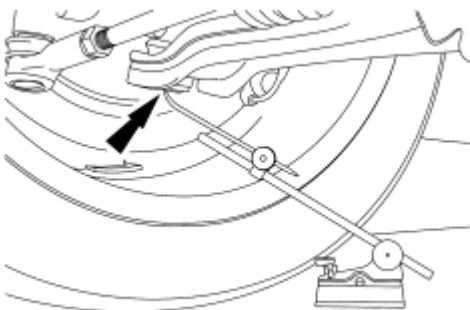
2. With the surface gauge positioned on a flat, level surface, record the measurement of the surface gauge position (measurement 2).



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Fig. 9: Recording Measurement Of Surface Gauge Position
Courtesy of FORD MOTOR CO.

3. Position the surface gauge on the same flat, level surface as used in Step 1, adjust the gauge's arm until the scribe point is located in the center of the lower ball joint.
 - Lock the surface gauge in this position.



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Fig. 10: Locating Lower Ball Joint
Courtesy of FORD MOTOR CO.

4. With the surface gauge positioned on a flat, level surface, record the measurement of the surface gauge

position (measurement 3).

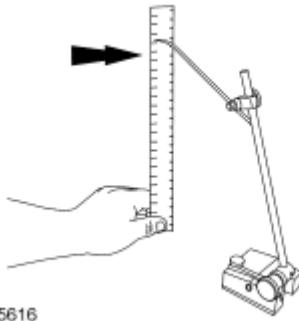


Fig. 11: Recording Measurement Of Surface Gauge Position
Courtesy of FORD MOTOR CO.

5. Subtract measurement 3 from measurement 2 to obtain the front ride height.
 - Refer to **SPECIFICATIONS**.

Rear Ride Height Measurement

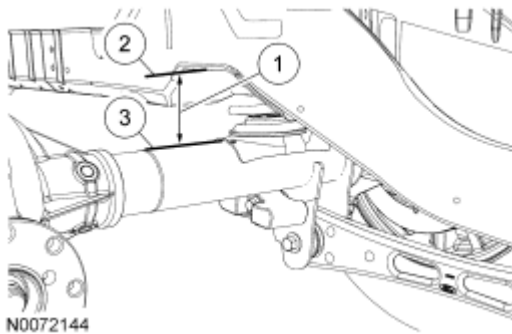


Fig. 12: Rear Ride Height Measurement
Courtesy of FORD MOTOR CO.

Item	Description
1	Ride height = 2 - 3
2	Measurement Point 2
3	Measurement Point 3

NOTE: Make sure that the vehicle is positioned on a flat, level surface and the tires are inflated to the correct pressure. Vehicle should have a full tank of fuel.

1. To obtain rear ride height, measure the distance between points 2 and 3. For additional information, refer to **SPECIFICATIONS**.

CAMBER ADJUSTMENT - FRONT

NOTE: If camber adjustment is necessary to resolve a vehicle alignment issue, then slotting the strut at the lower mounting plate and installing a cam bolt is an acceptable method. This procedure should not be routinely performed with all alignments and only after all other possible sources have been inspected and corrected as necessary.

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING AND LIFTING** article.
2. Remove the wheel speed sensor bolt and position the sensor aside.

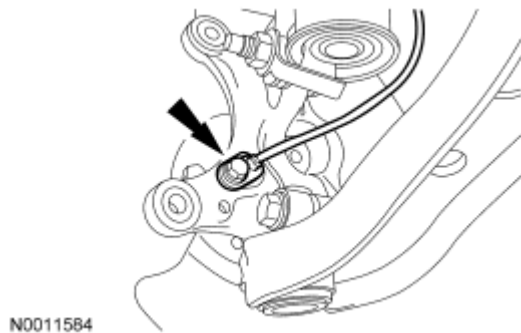


Fig. 13: Locating Wheel Speed Sensor Bolt
Courtesy of FORD MOTOR CO.

3. Remove the brake line bracket bolt and disconnect the wheel speed sensor wire from the bracket.

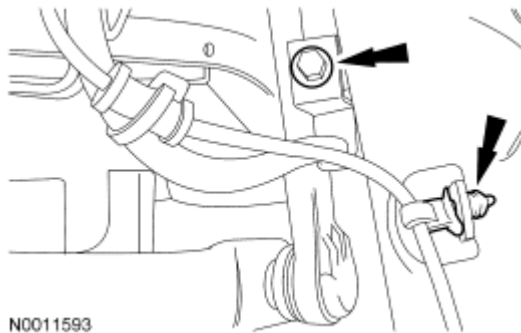


Fig. 14: Locating Brake Line Bracket Bolt
Courtesy of FORD MOTOR CO.

NOTE: Support the wheel spindle using mechanic's wire.

4. Note the orientation of the strut-to-spindle bolts and flag nuts, then remove and discard the bolts and flag nuts.

NOTE: Do not enlarge the holes any more than indicated by the etchings on the strut mount or damage to the strut mount may occur.

5. Using a suitable grinding tool, enlarge the strut-to-wheel spindle lower mounting holes as indicated by the etchings in the strut lower mount.
 - Remove any burrs.
 - Clean and paint any exposed metal.

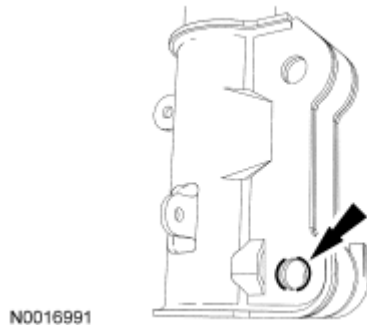


Fig. 15: Locating Strut-To-Wheel Spindle Lower Mounting Holes
Courtesy of FORD MOTOR CO.

NOTE: Do not fully tighten the cam bolts until the alignment has been corrected.

6. Position the wheel spindle and install a cam adjusting nut and bolt in the bottom location, using the opposite orientation noted in Step 4. Then install a new bolt and flag nut in the top location.
 - Tighten the upper bolt and cam nut until snug.
7. Position the brake line bracket and install the bolt, connect the wheel speed sensor wire to the bracket.
 - Tighten to 20 Nm (177 lb-in).
8. Position the wheel speed sensor and install the bolt.
 - Tighten to 15 Nm (133 lb-in).
9. Using alignment equipment and the manufacturer's instructions, measure the front camber.
10. Using the cam bolt, adjust the front camber until it is within specifications.
 - Tighten the strut-to-wheel spindle cam nut to 200 Nm (148 lb-ft).
 - Tighten the strut-to-wheel spindle upper bolt to 200 Nm (148 lb-ft).
11. Recheck the front camber settings, adjust as necessary.

TOE ADJUSTMENT - FRONT

1. Start the engine and center the steering wheel.
2. Turn the engine off and, using a suitable steering wheel holding device, lock the steering wheel in the straight ahead position.
3. Using alignment equipment and the manufacturer's instructions, measure the front toe.
4. Remove the clamps.

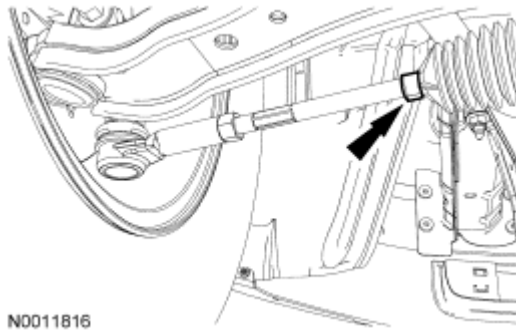


Fig. 16: Locating Clamps
Courtesy of FORD MOTOR CO.

5. Loosen the tie-rod jam nuts.

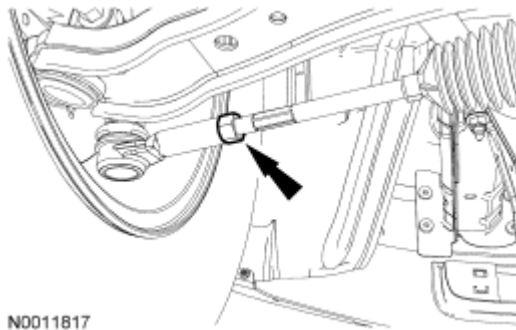


Fig. 17: Locating Jam Nuts
Courtesy of FORD MOTOR CO.

NOTE: Do not allow the steering gear bellows to twist when the inner tie rod is rotated.

6. Rotate the inner tie rods until the toe reading is within specifications.

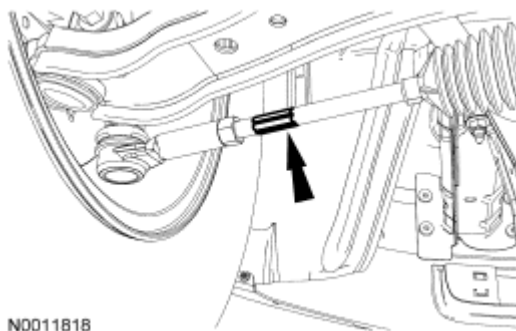


Fig. 18: Locating Inner Tie Rod
Courtesy of FORD MOTOR CO.

NOTE: Do not allow the inner tie rods to rotate while tightening the tie-rod jam

nuts.

7. Tighten the tie-rod jam nuts to 55 Nm (41 lb-ft).

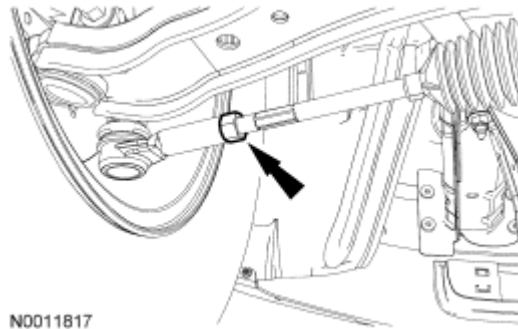


Fig. 19: Locating Jam Nuts
Courtesy of FORD MOTOR CO.

8. Install the clamps.

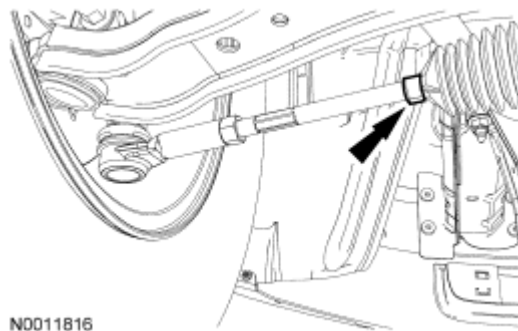


Fig. 20: Locating Clamps
Courtesy of FORD MOTOR CO.

9. Recheck the toe settings and adjust as necessary.

CASTER ADJUSTMENT - FRONT

NOTE: If caster adjustment is necessary to resolve a vehicle alignment issue, then slotting the subframe and installing cam bolts is an acceptable method. This procedure should not be routinely performed with all alignments and only after all other possible sources have been inspected and corrected as necessary.

1. Remove the front lower control arm. For additional information, refer to **FRONT SUSPENSION** article.

NOTE: Do not elongate the hole any more than indicated by the etchings on the subframe or damage to the subframe may occur.

2. Using a suitable grinding tool, elongate the lower control arm rear outboard mounting hole as indicated by the etchings in the subframe.
 - Remove any burrs.
 - Clean and paint any exposed metal.

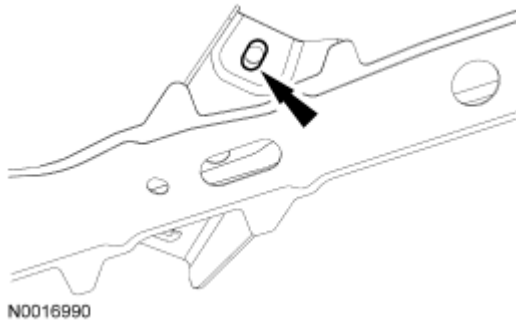


Fig. 21: Locating Lower Control Arm Rear Outboard Mounting Hole
Courtesy of FORD MOTOR CO.

3. Install the front lower control arm using a cam bolt and a new nut in the rear inboard mounting hole. For additional information, refer to **FRONT SUSPENSION** article.
 - Do not tighten the cam bolt until the alignment has been corrected.

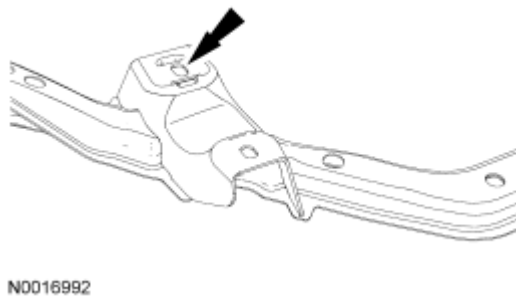


Fig. 22: Locating Rear Inboard Mounting Hole
Courtesy of FORD MOTOR CO.

4. Using alignment equipment and the manufacturer's instructions, measure the caster.
5. Using the cam bolt, adjust the front caster until it is within specifications.
 - Tighten the lower control arm rear inboard cam nut to 185 Nm (136 lb-ft).
6. Recheck the caster settings and adjust as necessary.