204-00 Suspension System - General Information *2019 Ranger*
Diagnosis and Testing *Procedure revision date: 12/14/2018*

Suspension System

Preliminary Inspection

1. Road test the vehicle.
   - If any suspension alignment or ride height concerns are present, REFER to Symptom Chart: Suspension Systems.
   - Verify the customer concern by carrying out a road test on a smooth road. If any vibrations are present, REFER to Symptom Chart: NVH.

2. Inspect the tires.
   - Check the tire pressures with all normal loads in the vehicle and the tires cold. REFER to the 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.
   - Front or rear suspension components.
   - Suspension fastener(s).
   - Incorrect spring usage Spring(s).
   - Shock absorber(s).
   - Strut(s).
   - Suspension bushing(s).
   - Steering system components.
   - Wheel bearing and wheel hub(s).

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 shown in this manual do not apply to vehicles equipped with aftermarket equipment.

Symptom Chart: Suspension System

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

Condition	Possible Sources	Actions
Vehicle drifts/pulls	Refer to the Diagnostic Routine.	REFER to the symptom chart.   Click here to access Guided Routine (EPAS).
Wander	Overloaded, unevenly or incorrectly loaded vehicle	NOTIFY the customer of incorrect vehicle loading.
	Ball joint(s)	CARRY OUT a ball joint inspection. INSTALL new control arm(s) as necessary. REFER to: Lower Ball Joint (204-01B) . REFER to: Lower Ball Joint (204-01C) .
	Damaged or missing front strut mount bearing(s)	INSTALL a new front strut mount bearing(s) as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).

Condition	Possible Sources	Actions
	Loose, worn or damaged front wheel bearing(s)	INSPECT the wheel bearings. INSTALL new wheel bearings as necessary. REFER to: Front Wheel Bearing and Wheel Hub (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Wheel Bearing and Wheel Hub (204-01B Front Suspension - 4WD, Removal and Installation).
	Loose, worn or damaged suspension component(s)	INSTALL new suspension component(s) as necessary.
	Loose suspension fasteners	**NOTE:** *Do not lubricate fasteners.* INSPECT the suspension fasteners. TIGHTEN to specifications.
	Steering components	INSPECT the steering system. INSTALL new components as necessary.
	Wheel alignment (excessive total front toe out)	ADJUST as necessary. REFER to: Front Toe Adjustment (204-00 Suspension System - General Information, General Procedures).
Front bottoming or riding low	Worn, damaged or incorrect springs	MEASURE the ride height. REFER to: Ride Height Measurement (204-00 Suspension System - General Information, General Procedures). INSTALL new springs as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).
	Worn front strut(s)	INSTALL new struts as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).
Abnormal/incorrect tire wear	Incorrect tire pressure (rapid center rib or inner and outer edge wear)	ADJUST the tire pressure. REFER to VC label.
	Incorrect tire rotation intervals	REFER to Owners Literature for correct tire rotation intervals.
	• High-speed cornering • Excessive front or rear toe (inner or outer edge wear) • Excessive negative or positive camber (inner or outer edge wear)	REFER to: Wheels and Tires (204-04A Wheels and Tires, Diagnosis and Testing).
	Front or rear suspension components	INSPECT the front and rear suspension system. REPAIR or INSTALL new suspension components as necessary.
Sticky steering, poor returnability	Damaged or worn front strut mount bearing(s)	INSTALL a new front strut mount bearing(s) as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).
	Binding ball joints	CARRY OUT a ball joint inspection. INSTALL new ball joint(s) as necessary. REFER to: Lower Ball Joint (204-01B) . REFER to: Lower Ball Joint (204-01C) .
	Steering components	INSPECT the steering system. INSTALL new components as necessary. REFER to: Power Steering (211-02 Power Steering, Diagnosis and Testing).

Condition	Possible Sources	Actions
Steering wheel off-center	Unequal front toe setting (side-to-side)	CHECK the wheel alignment. REFER to: Front Toe Adjustment (204-00 Suspension System - General Information, General Procedures).
	Steering components	INSPECT the steering system. INSTALL new components as necessary
Sway or roll	Overloaded, unevenly or incorrectly loaded vehicle	NOTIFY the customer of incorrect vehicle loading.
	Loose wheel nut(s)	TIGHTEN the wheel nut(s) to specification. REFER to: Wheel and Tire (204-04A Wheels and Tires, Removal and Installation).
	Strut(s) or shock absorber(s)	INSTALL new struts or shock absorbers as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).
	Loose stabilizer bracket-to-frame bolts	TIGHTEN the bolts to specification. REFER to: Front Stabilizer Bar (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Stabilizer Bar (204-01B Front Suspension - 4WD, Removal and Installation).
	Worn stabilizer bar bushings or links	INSTALL new stabilizer bar bushings or links as necessary. REFER to: Front Stabilizer Bar (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Stabilizer Bar (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Front Stabilizer Bar Link (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Stabilizer Bar Link (204-01B Front Suspension - 4WD, Removal and Installation).
	Damaged or broken stabilizer bar	INSTALL a new stabilizer bar as necessary.
	Worn spring(s)	INSTALL new springs as necessary. INSTALL new struts or shock absorbers as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Rear Shock Absorber (204-02 Rear Suspension, Removal and Installation).
Vehicle leans to one side	Unevenly loaded or overloaded vehicle	NOTIFY the customer of incorrect vehicle loading.
	Front or rear suspension components	INSPECT the front and rear suspension systems. INSTALL new suspension components as necessary.
	Incorrect drive axle(s) ride height. Side-to-side lean out of specification	MEASURE the ride height. REFER to: Ride Height Measurement (204-00 Suspension System - General Information, General Procedures). INSPECT the front and rear suspension systems. REPAIR or INSTALL new components as necessary

- If an obvious cause for an observed or reported condition is found, correct the cause (if possible) before proceeding to the next step.
- If the fault is not visually evident, REFER to Symptom Chart or REFER to Symptom Chart: NVH.

Symptom Chart: NVH

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

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, Glossary of Terms
REFER to: Noise, Vibration and Harshness (NVH) (100-04 Noise, Vibration and Harshness, Diagnosis and Testing).
Since it is 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 to: Noise, Vibration and Harshness (NVH) (100-04 Noise, Vibration and Harshness, Diagnosis and Testing).
for the next likely system and continue diagnosis.

Additional diagnostics may be necessary to further isolate the concern. An electronic listening tool such as Chassis Ear® may be used. Follow the tool manufacturer's instructions and the Possible Sources found in the following NVH chart to determine the connection points.

Condition	Possible Sources	Actions
Front suspension noise — a squeak, creak or rattle noise. Occurs mostly over bumps or rough roads due to the suspension moving in an up/down motion.	Strut top nut	INSPECT and TIGHTEN to specification. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).
	Jounce bumper	INSPECT, LUBRICATE or INSTALL new components as necessary.
	Stabilizer bar insulators and/or Stabilizer bar links	INSPECT for out-of-position bushings, isolators or locating pins. INSTALL new components as necessary. REFER to: Front Stabilizer Bar (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Stabilizer Bar (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Front Stabilizer Bar Link (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Stabilizer Bar Link (204-01B Front Suspension - 4WD, Removal and Installation).
	Steering gear and/or Tie rod ends	INSPECT the steering gear and tie rod ends. INSTALL new components as necessary. REFER to: Power Steering (211-02 Power Steering, Diagnosis and Testing).
	Front brake caliper	INSPECT the front brake caliper(s). REFER to: Brake System (206-00 Brake System - General Information, Diagnosis and Testing).
	Lower control arm / ball joint	CARRY OUT a ball joint inspection. INSTALL new lower ball joints as necessary. REFER to: Lower Arm (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Lower Arm (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Lower Ball Joint (204-01B) . REFER to: Lower Ball Joint (204-01C) .
	Hub	INSPECT hub(s). REPAIR or REPLACE as necessary. REFER to: Front Wheel Bearing and Wheel Hub (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Wheel Bearing and Wheel Hub (204-01B Front Suspension - 4WD, Removal and Installation).
	Exhaust system	INSPECT the exhaust system. REFER to: Exhaust System (309-00 Exhaust System - 2.3L EcoBoost (201kW/273PS), Diagnosis and Testing).

Condition	Possible Sources	Actions
	Powertrain mounts	INSPECT the powertrain mounts. REFER to: Engine (303-00 Engine System - General Information, Diagnosis and Testing).
Rear suspension noise — a squeak, creak or rattle noise. Occurs mostly over bumps or rough roads due to the suspension moving in an up/down motion.	Loose or damaged rear shock absorber(s) or shock absorber bushing(s)	INSPECT the rear shock absorber(s) or shock absorber bushing(s). INSTALL new components as necessary. REFER to: Rear Shock Absorber (204-02 Rear Suspension, Removal and Installation).
	Rear leaf spring tip isolator or bushing	INSPECT the rear leaf spring tip isolator(s) or bushing(s). REPLACE damaged components as necessary. REFER to: Spring (204-02 Rear Suspension, Removal and Installation).
	Damaged spring(s) or spring mount(s)	INSPECT the rear spring(s) and spring mount(s). REPLACE damaged components as necessary. REFER to: Spring (204-02 Rear Suspension, Removal and Installation).
	Rear leaf spring or bushing contaminated with dirt, sand or mud	**NOTE:** *To avoid the re-occurrence of noise, make sure that all contamination and moisture trapped between the individual leaf spring components have been completely removed.* **NOTE:** *Do not apply any lubricant or grease to the leaf springs as this will attract dirt and moisture.* PRESSURE WASH the leaf springs between the individual spring leafs and the gaps between the spring bushings, mounting brackets and shackles to remove any trapped debris. USE compressed (shop) air to remove any remaining debris and to completely dry between all of the individual spring components.Verify noise symptom is not present. If still present replace tip insert.
Noise from front suspension when turning — crunch or ratcheting noise. Occurs as a result of the suspension twisting and flexing.	Strut top nut	INSPECT and TIGHTEN to specification. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).
	Worn or damaged front strut bearing(s)	INSPECT for worn or damaged strut bearing. INSTALL new components as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).
	Coil Spring	INSPECT springs. REPLACE as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation).
	Strut brackets or seat(s)	INSPECT strut brackets or seat(s). REPAIR as necessary.
	Stabilizer bar	INSPECT the stabilizer bar. REPAIR or REPLACE as necessary. REFER to: Front Stabilizer Bar (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Stabilizer Bar (204-01B Front Suspension - 4WD, Removal and Installation).
	Steering gear	INSPECT the steering gear. REFER to: Power Steering (211-02 Power Steering, Diagnosis and Testing).

Condition	Possible Sources	Actions
	Tie rod ends	INSPECT tie rod ends. INSTALL new components as necessary. REFER to: Tie Rod End (211-02 Power Steering, Removal and Installation).
	Hub	INSPECT hub(s). REPAIR or REPLACE as necessary. REFER to: Front Wheel Bearing and Wheel Hub (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Wheel Bearing and Wheel Hub (204-01B Front Suspension - 4WD, Removal and Installation).
	Lower control arm / ball joint	CARRY OUT a ball joint inspection. INSTALL new control arm(s) as necessary. REFER to: Lower Arm (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Lower Arm (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Lower Ball Joint (204-01B) . REFER to: Lower Ball Joint (204-01C) .
Noise from front suspension when turning — Crunch clunk or grunt noise from the front suspension occurring when turning to full left or right stop.	Steering stops	Normal condition. No action required.
Noise while braking — Noises occurring during this condition result from rearward and downward force applied to the suspension and subframe such as rearward force applied to the lower control arm.	Front brake caliper	INSPECT the front brake caliper(s). REFER to: Brake System (206-00 Brake System - General Information, Diagnosis and Testing).
	Hub	INSPECT hub(s). REPAIR or REPLACE as necessary. REFER to: Front Wheel Bearing and Wheel Hub (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Wheel Bearing and Wheel Hub (204-01B Front Suspension - 4WD, Removal and Installation).
	Lower control arm / ball joint	CARRY OUT a ball joint inspection. INSTALL new lower ball joints as necessary. REFER to: Lower Arm (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Lower Arm (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Lower Ball Joint (204-01B) . REFER to: Lower Ball Joint (204-01C) .
	Powertrain mounts	INSPECT the powertrain mounts. REFER to: Engine (303-00 Engine System - General Information, Diagnosis and Testing).
Noise while accelerating — Noises occurring during this condition result from powertrain torque and flex, such as torque on the powertrain mounts during acceleration.	Body (inner fender, bulkhead, seams and pinch welds)	INSPECT and REPAIR as necessary.
	Hub	INSPECT hub(s). REPAIR or REPLACE as necessary. REFER to: Front Wheel Bearing and Wheel Hub (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Wheel Bearing and Wheel Hub (204-01B Front Suspension - 4WD, Removal and Installation).
	Powertrain mounts	INSPECT the powertrain mounts. REFER to: Engine (303-00 Engine System - General Information, Diagnosis and Testing).
	Exhaust system	INSPECT the exhaust system. REFER to: Exhaust System (309-00 Exhaust System - 2.3L EcoBoost (201kW/273PS), Diagnosis and Testing).

Condition	Possible Sources	Actions
Noise while entering driveways or driving over dips or depressions — Noises occurring during this condition result from the body , subframe or suspension twisting or flexing such as the tension on body structure welds.	Body (inner fender, bulkhead, seams and pinch welds)	INSPECT and REPAIR as necessary.
	Stabilizer bar links	INSPECT the stabilizer bar links. INSTALL new stabilizer bar links as necessary. REFER to: Front Stabilizer Bar Link (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Stabilizer Bar Link (204-01B Front Suspension - 4WD, Removal and Installation).
Clunk or pop or thump/thud — noise may be thought of as a loose part striking an adjacent part or a secure part coming loose when force is applied. A clunk is often rhythmic, repeatable and metallic in nature.	Loose fasteners	INSPECT for loose nuts or bolts.
	Worn or damaged bushings	INSPECT for out-of-position or damaged components.
	Struts & shocks	INSPECT for worn or damaged struts or shocks. REPLACE as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Rear Shock Absorber (204-02 Rear Suspension, Removal and Installation).
	Coil spring or spring seat out of position	INSPECT for out-of-position or damaged components. ADJUST or REPLACE as necessary.
	Worn or damaged ball joint(s)	CARRY OUT a ball joint inspection. INSTALL new control arm(s) as necessary. REFER to: Lower Arm (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Lower Arm (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Lower Ball Joint (204-01B) . REFER to: Lower Ball Joint (204-01C) .
Rattle — noise occurs mostly over bumps, rough roads or uneven surfaces at low speeds (i.e. parking lot). A rattle is often a rapid, repetitive noise that can be metallic or non-metallic in nature.	• Loose fasteners or brackets • Loose or damaged front struts, shock absorber(s) or shock absorber bushing(s), dust boot(s), jounce bumper(s) • Damaged spring or spring mount(s) • Damaged or worn control/radius arm bushing(s) • Worn or damaged stabilizer bar bushings or link(s)	INSPECT for loose nuts or bolts. TIGHTEN to specification. INSPECT for out-of-position or damaged components. ADJUST or INSTALL new components as necessary.

Condition	Possible Sources	Actions
Whine, roar or groan — noise generally occurs over 30 mph and is often more noticeable with steering input.	Loose or damaged wheel bearings	INSPECT the front or rear wheel bearing(s). INSTALL new bearing(s) as necessary. REFER to: Front Wheel Bearing and Wheel Hub (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Wheel Bearing and Wheel Hub (204-01B Front Suspension - 4WD, Removal and Installation).
Shimmy	Loose wheel nut(s)	TIGHTEN the nut(s) to specification. REFER to: Wheel and Tire (204-04A Wheels and Tires, Removal and Installation).
	Loose front suspension fastener(s)	TIGHTEN the fastener(s) to specifications.
	Loose front wheel bearing(s)	INSPECT the front wheel bearing(s). INSTALL new bearing(s) as necessary. REFER to: Front Wheel Bearing and Wheel Hub (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Front Wheel Bearing and Wheel Hub (204-01B Front Suspension - 4WD, Removal and Installation).
	Strut(s) or shock absorber(s)	INSTALL new struts or shock absorbers as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Rear Shock Absorber (204-02 Rear Suspension, Removal and Installation).
Shimmy — most noticeable on coast/deceleration. Also hard steering condition	Excessive positive caster	INSPECT the front suspension. REPAIR or INSTALL new suspension components as necessary.
Rough/harsh ride	Incorrect tire pressure	ADJUST the tire pressure. REFER to VC label.
	Strut(s) or shock absorber(s)	INSTALL new struts or shock absorbers as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Rear Shock Absorber (204-02 Rear Suspension, Removal and Installation).
	Spring(s)	MEASURE the ride height. REFER to: Ride Height Measurement (204-00 Suspension System - General Information, General Procedures). INSTALL new springs as necessary. REFER to: Shock Absorber and Spring Assembly (204-01A Front Suspension - RWD, Removal and Installation). REFER to: Shock Absorber and Spring Assembly (204-01B Front Suspension - 4WD, Removal and Installation). REFER to: Spring (204-02 Rear Suspension, Removal and Installation).
	Damaged suspension component(s)	INSTALL new suspension component(s) as necessary.
Shudder — occurs during acceleration from a slow speed or stop	Incorrect ride height causing incorrect driveline angle	INSPECT driveline angle. REFER to: Driveshaft Angle Measurement (205-01 Driveshaft, General Procedures).

Pinpoint Tests

Diagnostic Overview

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

PINPOINT TEST A : VEHICLE DRIFTS, PULLS

Component Tests

Ball Joint Inspection

1. Prior to inspecting the ball joints for wear, inspect the wheel bearings and wheel hubs.
   REFER to: Noise, Vibration and Harshness (NVH) (100-04 Noise, Vibration and Harshness, Diagnosis and Testing).

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

   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 lower ball joint as necessary.
     REFER to: Lower Ball Joint (204-01B) .
     REFER to: Lower Ball Joint (204-01C) .

NOTE: *Carry out Steps 4 through 6 to inspect the lower ball joint. Carry out Steps 7 through 9 to inspect the upper ball joint.*

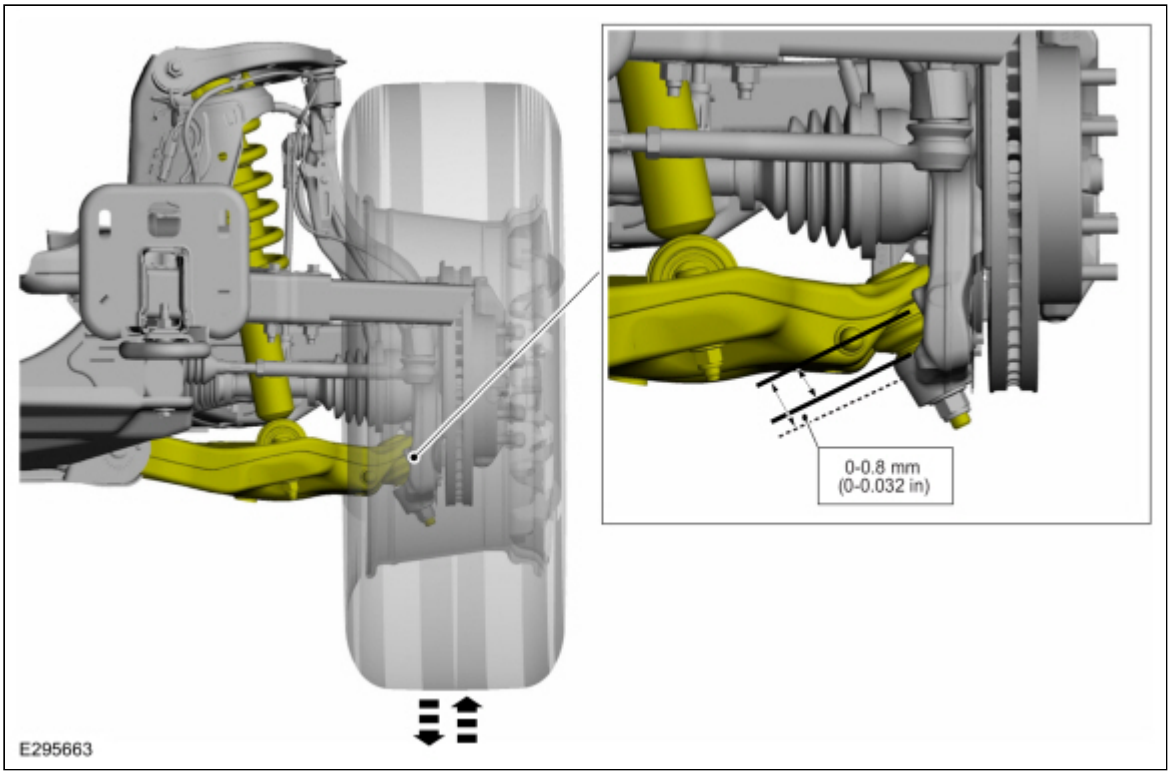
4. **NOTICE: Do not use any tools or equipment to move the wheel and tire assembly or suspension components while checking for relative movement. Suspension damage may occur. The use of tools or equipment will also create relative movement that may not exist when using hand force. Relative movement must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

   NOTE: *The weight of the wheel and tire assembly must be overcome to obtain an accurate measurement on the dial indicator.*

   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 control arm at the lower ball joint.
   - If relative movement is not felt or seen, the ball joint is OK. Do not install a new lower ball joint.
   - If relative movement is found, continue with Step 5.

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.*

   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.



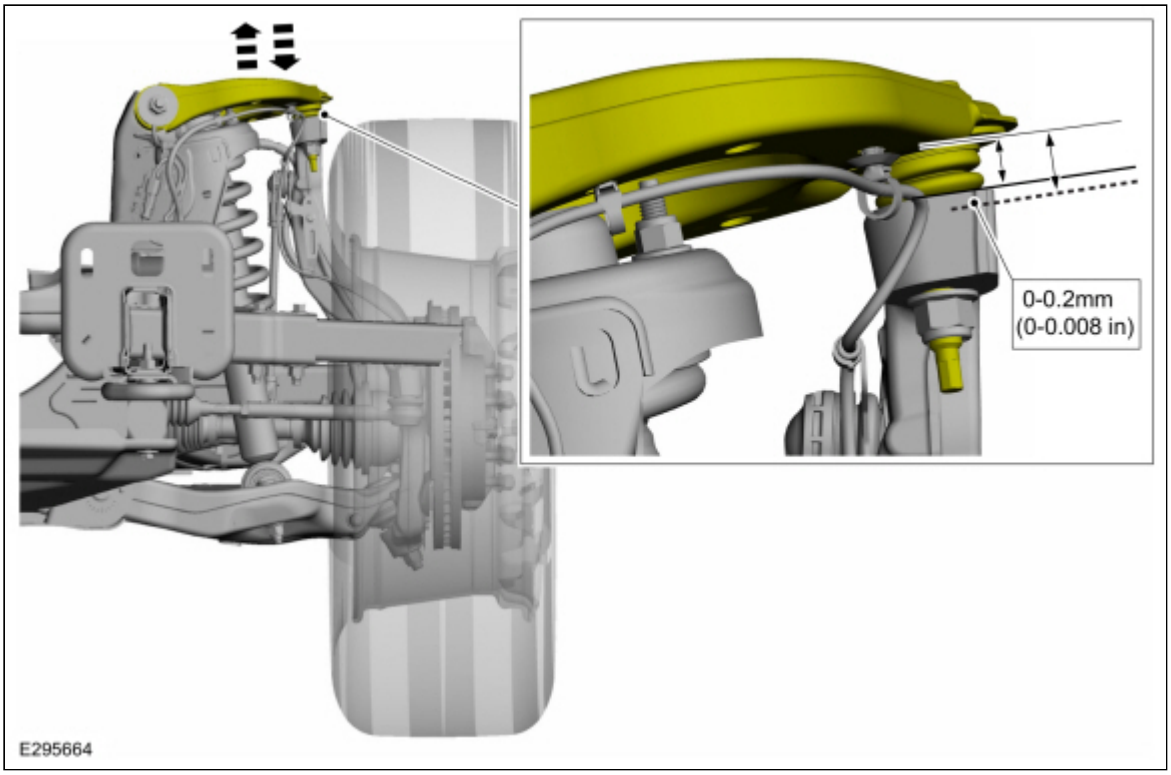
6. Measure the ball joint deflection while an assistant pushes up and pulls down on the lower control arm, by hand.
   - If the deflection exceeds the specification, a new lower ball joint must be installed.
     REFER to: Lower Ball Joint (204-01B) .
     REFER to: Lower Ball Joint (204-01C) .
   - If the deflection meets the specification, continue with the procedure.

7. **NOTICE: 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.**

   Inspect the ball joint for relative movement by alternately pulling downward and pushing upward on the upper control arm by hand. Note any relative vertical movement between the wheel knuckle and upper arm at the upper 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 8

8. **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.*

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



9. Measure the ball joint deflection while an assistant pushes up and then pulls down on the upper control arm, by hand.
    - If the deflection exceeds the specification, a new upper arm must be installed.
      REFER to: Upper Arm (204-01A Front Suspension - RWD, Removal and Installation).
      REFER to: Upper Arm (204-01B Front Suspension - 4WD, Removal and Installation).

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