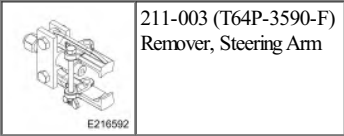


Front Camber and Caster Adjustment - F-450/F-550, RWD

Special Tool(s) / General Equipment



Adjustment

1. **NOTICE:** Do not bend the axles or the radius arms to change alignment angles or damage to the vehicle's axle and radius arms can occur.

Using alignment equipment and the manufacturer's instructions, measure the caster and camber.

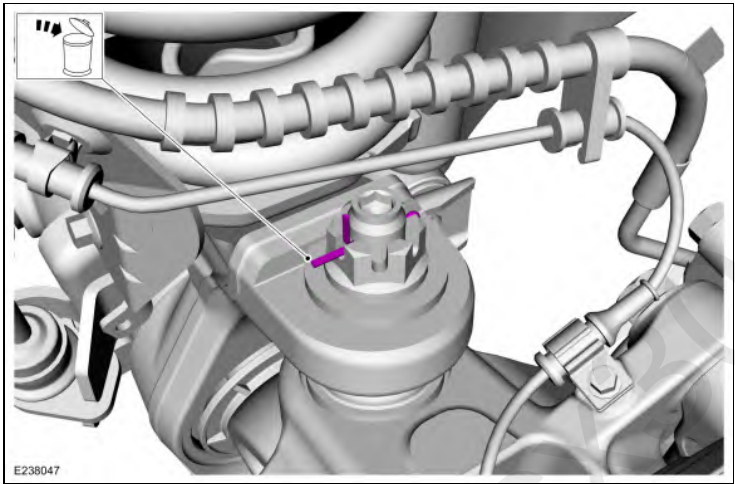
- Refer to Alignment Specifications for optimal alignment settings.
Refer to: Specifications (204-00 Suspension System - General Information, Specifications).
- If the caster and camber values are not within specification, go to the next step.

2. Remove the front wheels and tires.

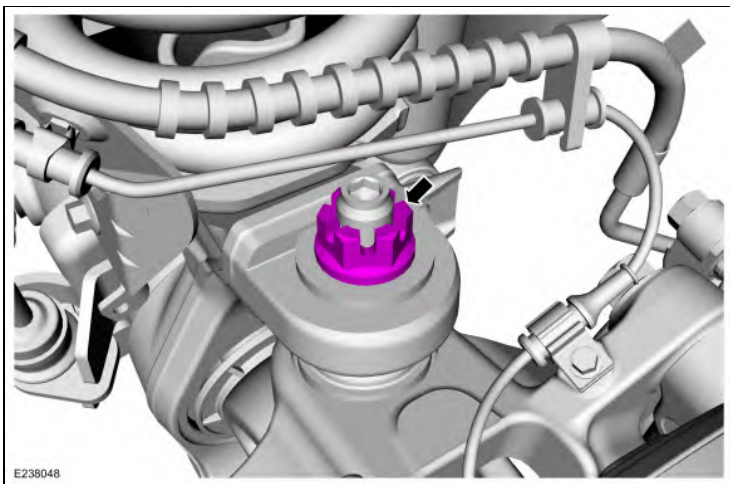
Refer to: Wheel and Tire - Vehicles With: Single Rear Wheels (204-04A Wheels and Tires, Removal and Installation).

Refer to: Wheel and Tire - Vehicles With: Dual Rear Wheels (204-04A Wheels and Tires, Removal and Installation).

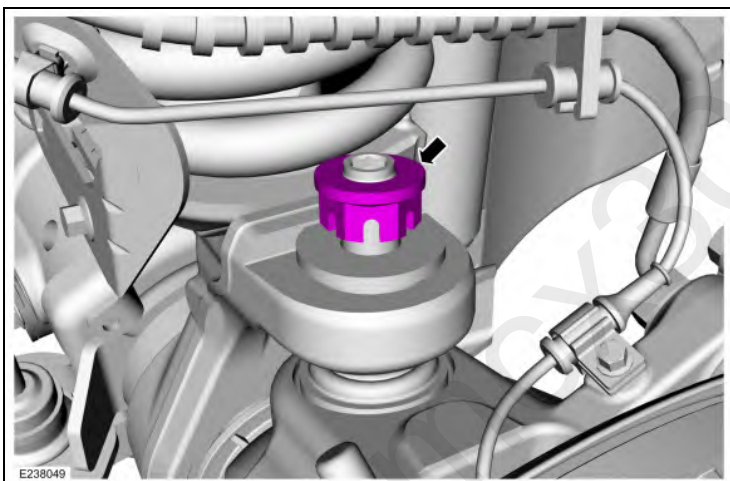
3. On both sides. Remove and discard the cotter pin from the upper ball joint.



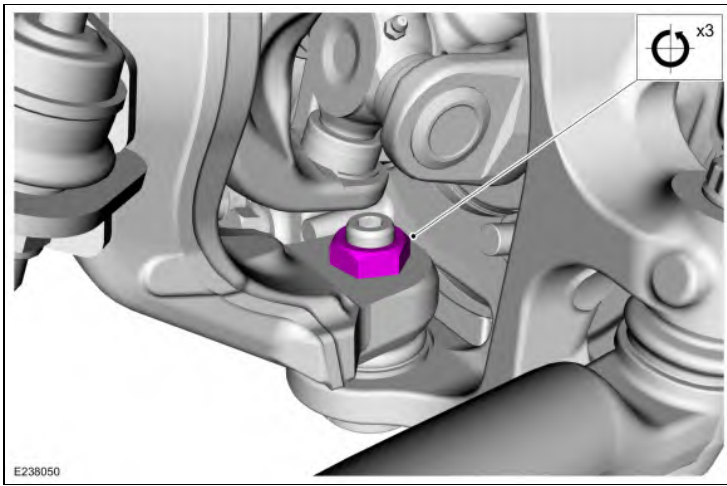
4. On both sides. Remove the nut from the upper ball joint.



5. On both sides. Loosely install the nut, inverted, onto the upper ball joint stud.

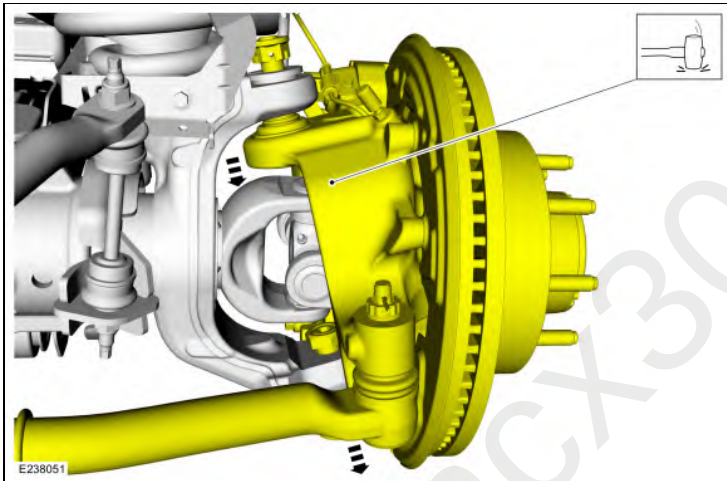


6. On both sides. Loosen the lower ball joint nut to the end of the lower ball joint stud, approximately 3 turns.

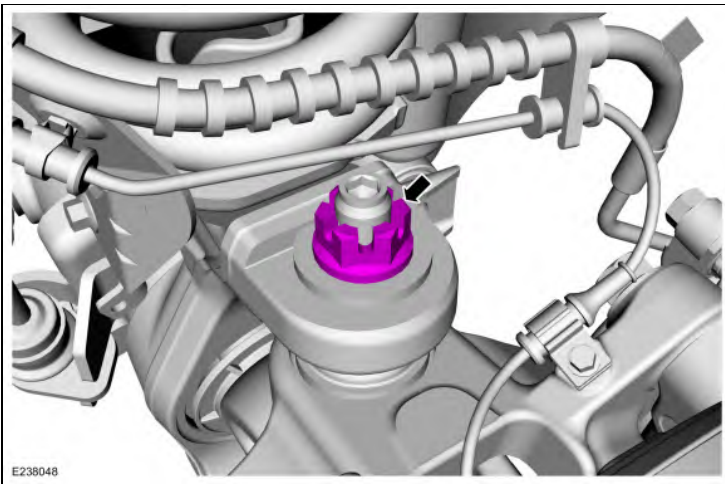


7. **NOTICE:** Use care not to damage the brake and vacuum lines when striking the wheel spindle or wheel knuckle.

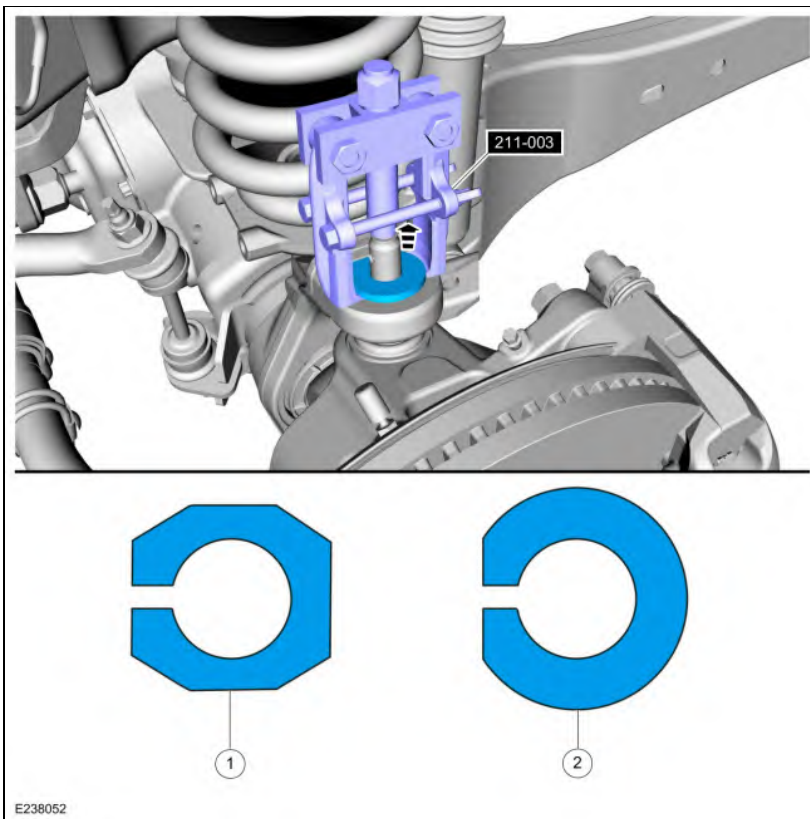
On both sides. Strike the wheel spindle or wheel knuckle to separate it from the axle.



8. On both sides. Remove the nut from the upper ball joint.

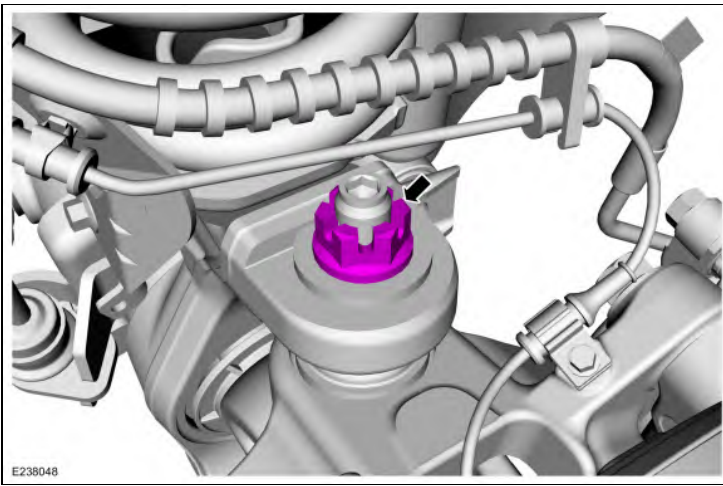


9. On both sides. Remove the existing LH and RH adjuster sleeves. All vehicles are built by the assembly plant with a non-adjustable camber/caster sleeve.
1. Service adjusters have a 8-sided flange with the camber/caster adjustment range stamped into the bottom (0 degree, 1/4 degree, 1/2 degree, 3/4 degree or 1 degree).
 2. Production adjusters have a round flange with a flattened edge. The amounts of pre-set camber and caster are stamped into the top of the adjuster.
- Use Special Service Tool: 211-003 (T64P-3590-F) Remover, Steering Arm.

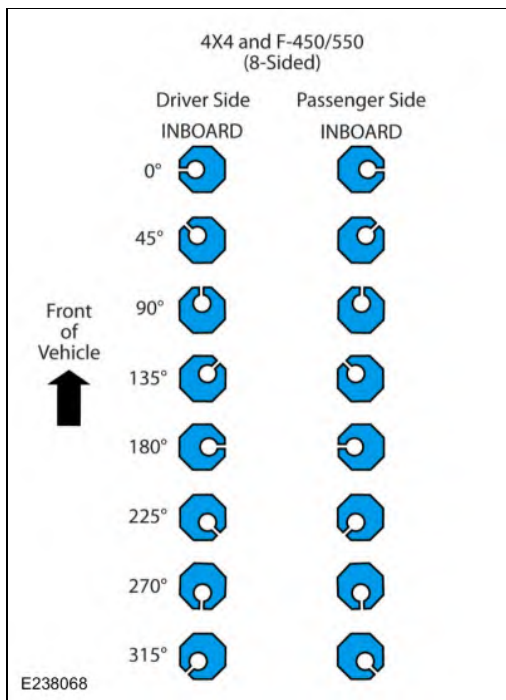


10. On both sides. Install an interim 0 degree service adjuster.

11. On both sides. Install the nut onto the upper ball joint.
Torque: 69 lb.ft (94 Nm)



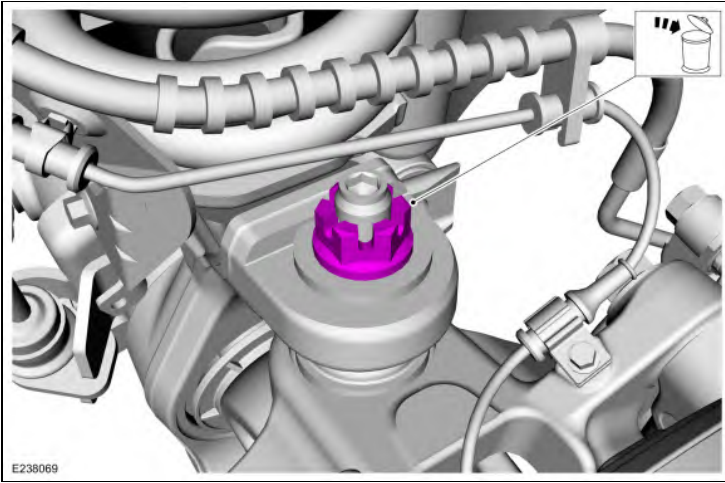
12. Install the front wheels and tires.
 Refer to: Wheel and Tire - Vehicles With: Single Rear Wheels (204-04A Wheels and Tires, Removal and Installation).
 Refer to: Wheel and Tire - Vehicles With: Dual Rear Wheels (204-04A Wheels and Tires, Removal and Installation).
13. Check the caster and camber readings with the 0 degree service adjusters installed.
14. Calculate the maximum amount of camber and/or caster adjustment required to achieve the optimal settings, as provided in the Alignment Specifications table, by subtracting the measured values from the optimal target values.
 - **NOTE:** Example: For a Four-Wheel Drive (4WD) F-350 pickup with Single Rear Wheel (SRW) ,
 - optimal camber spec target = $0.15^\circ \pm 0.75$.
 - optimal LH caster spec target = $2.7^\circ \pm 1.2$.
 - measured camber = 1.2 (out-of-spec).
 - measured LH caster = 2.0 (within spec).
 - required camber adjustment = $0.15 - 1.2 = -1.05$.
 - preferred caster adjustment = $2.7 - 2.0 = +0.7$, however not required.
15. Using the Camber/Caster Service Adjuster table, determine the appropriate replacement service adjuster needed to correct alignment. There is usually more than one combination of service adjuster and orientation that can be chosen to achieve alignment measurements within specifications. If a compromise is required, choose the adjuster and orientation which optimizes the camber value and maximizes the caster value.
 - Example: continuing the above example,
 - Choose an adjuster with a 1 degree adjustment circle.
 - Set the adjuster to the 180 degree position to achieve a -1 degree camber and 0 degree caster shift setting.



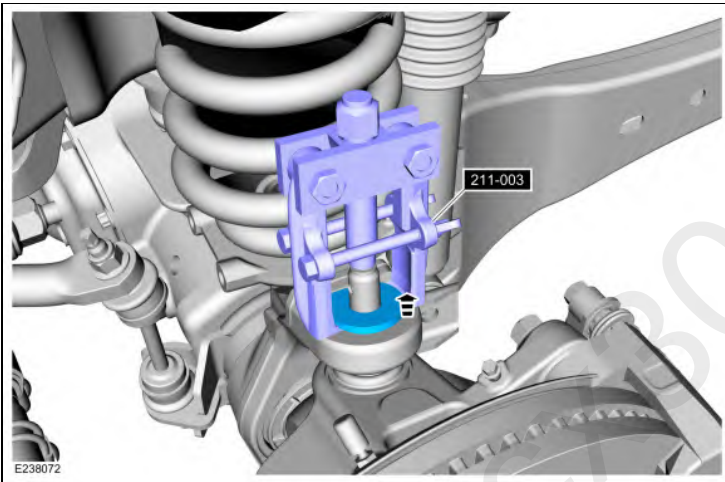
NOTE: When selecting a replacement service adjuster to achieve the desired amount of camber and caster offsets, caution is required to make sure that all other alignment characteristics (camber split, caster split and individual caster) are maintained to within their specified ranges. When in doubt of which service adjuster to choose, make the selection which achieves measured results closest to the optimal targets in the following order of priority:

- Caster split
- Individual camber
- Camber split
- Individual caster

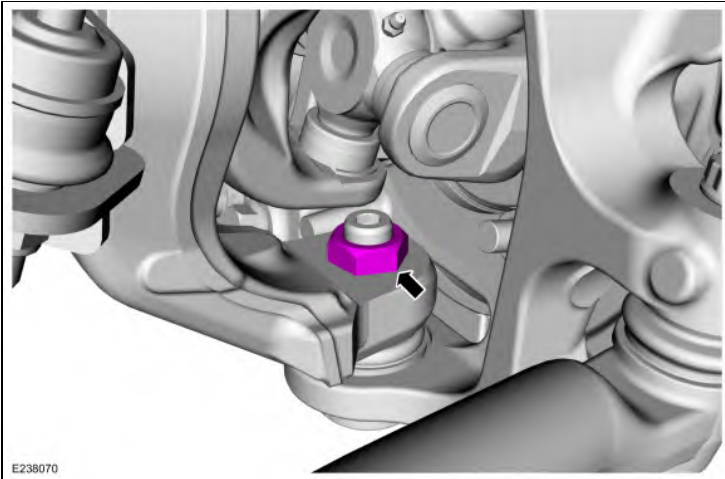
16. On both sides. Remove and discard the nut from the upper ball joint.



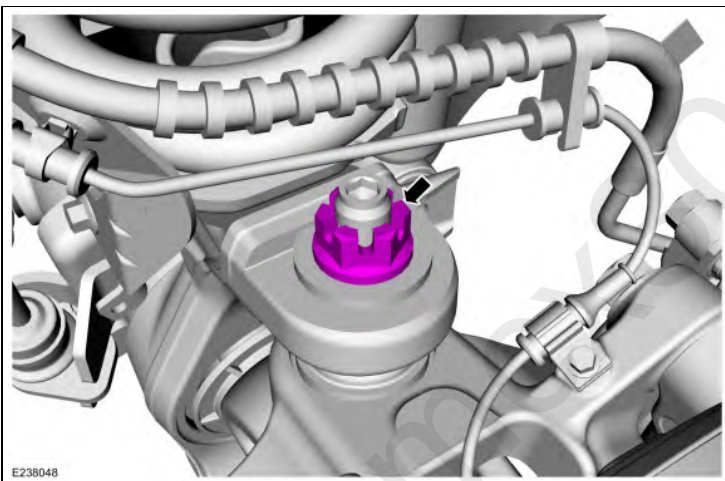
17. On both sides. Remove the 0 degree service adjusters and install the appropriate replacement service adjusters to the correct rotational orientation specified in the Camber/Caster Service Adjuster table.
Use Special Service Tool: 211-003 (T64P-3590-F) Remover, Steering Arm.



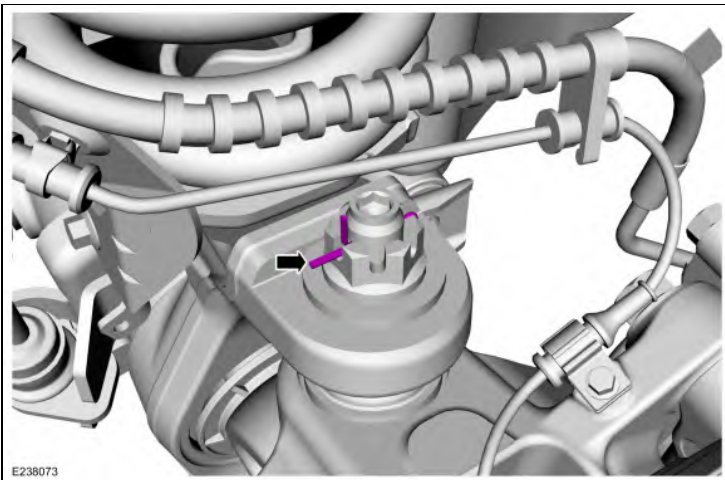
18. On both sides. Tighten the lower ball joint nut.
Torque: 69 lb.ft (94 Nm)



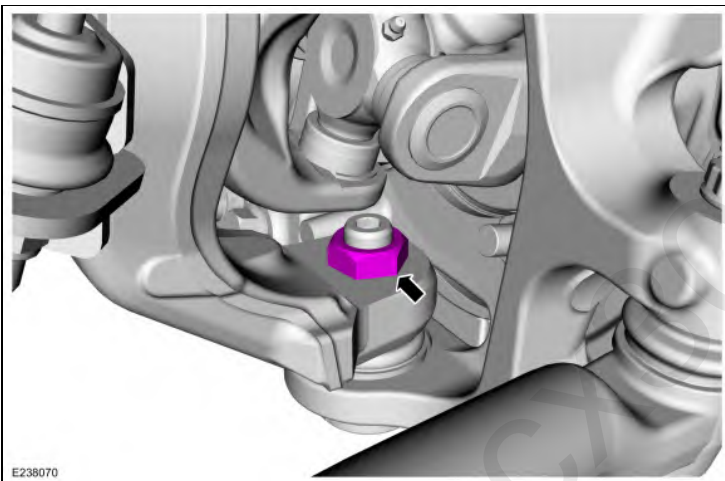
19. On both sides. Install the nut onto the upper ball joint.
Torque: 69 lb.ft (94 Nm)



20. On both sides. Install the new cotter pin into the upper ball joint.



21. On both sides. Tighten the lower ball joint nut.
Torque: 150 lb.ft (204 Nm)



- Once the optimal caster/camber has been achieved, check the total toe and adjust as necessary.
Refer to: Front Toe Adjustment - F-250/F-350, RWD (204-00 Suspension System - General Information, General Procedures).
Refer to: Front Toe Adjustment - F-450/F-550, RWD, Vehicles With: Adaptive Steering (204-00 Suspension System - General Information, General Procedures).