

Suspension System - General Information - Four-Wheel Alignment

General Procedures

• CAUTIONS:



Make sure the vehicle is on a flat level surface.



Make sure the tire pressures are within specification.



Make sure that only the manufacturers' recommended four wheel alignment equipment is used.



Make sure there are no heavy objects in the vehicle.



Make sure the air suspension is set to NORMAL ride height.



Make sure the steering is in the straight ahead position.



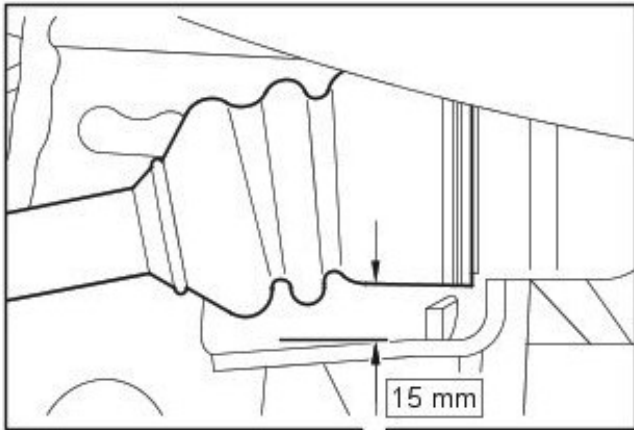
Make sure the slip plates (turntables) are free to move before adjusting the geometry.

1. Check the tie rod ends, suspension joints, wheel bearings and wheels and tires for damage, wear and free play.
 - Adjust or repair any worn, damaged or incorrectly adjusted components.
2. Check and adjust tire pressures.
3. Position the vehicle on a calibrated, level, vehicle lift.
4. Release the vehicle parking brake.
5. Using the approved diagnostic tool, check the air suspension control module for fault codes and clear as required.
6. Using the diagnostic tool, set vehicle to 'Geometry Set Mode', using the instructions below. Putting the vehicle into this mode will make sure that the ride heights are controlled more accurately.
 1. Select the 'Configuration' tab
 2. Select 'Set up and Configure'.
 3. Select 'Air Suspension'.
 4. Select 'Suspension Geometry Set Up'.
 5. Select 'Tight Tolerance Mode'.
 6. Follow the on-screen instructions until the set up process has finished.
7. NOTE: If rear camber adjustment is required, loosen the rear camber adjustment bolts enough to allow adjustment before starting any other wheel alignment adjustments. Do not fully loosen the rear camber adjustment bolts.

Using only four wheel alignment equipment approved by Land Rover, check and adjust the wheel alignment.



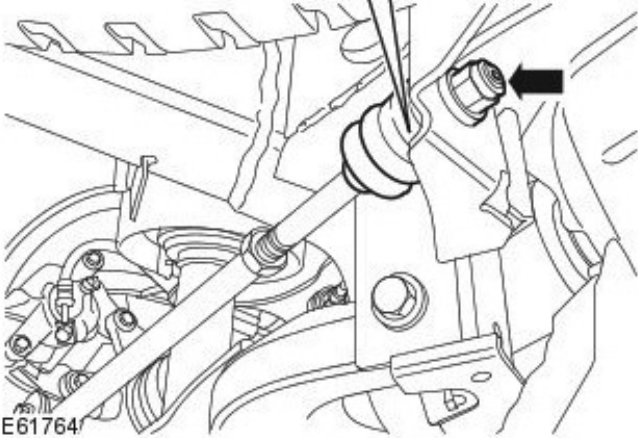
8. CAUTION: Make sure the toe link anti-rotation tang is fully seated in the integrated body frame before tightening the toe link retaining nut. Failure to follow this instruction will result in damage to the toe link or integrated body frame.



- **NOTE:** This step is only required if the toe links have been removed or replaced.

Adjust the rear bump steer.

- Loosen the toe link inner ball joint retaining nut.
- Set the gap, between the underside of the toe link rubber boot and the integrated body frame bracket, to 15 mm (0.473 in).
- Tighten the toe link inner ball joint retaining nut to 133 Nm (98 lb.ft)
- Repeat the above procedure for the other side.

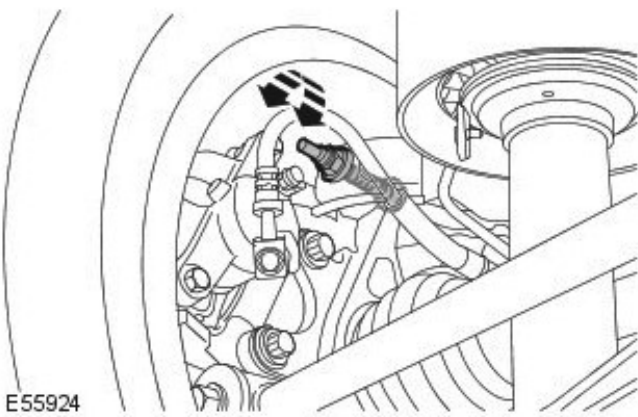


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- 9.** **NOTE:** The rear camber adjustment bolts cannot be fully tightened with the rear wheels installed. Do not remove the rear wheels to tighten the rear camber adjustment bolts until all other wheel alignment adjustments have been completed.

Adjust the rear camber.

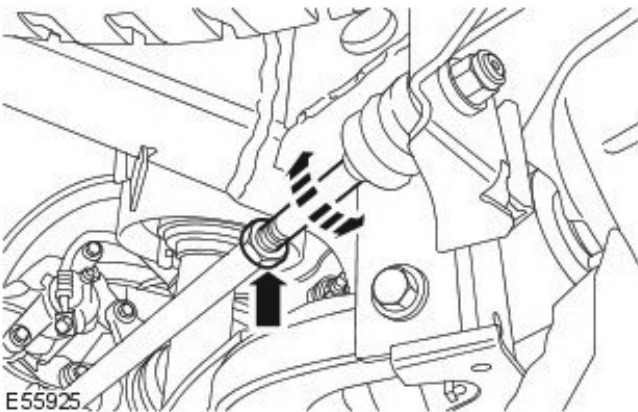
- Loosen the rear camber adjusting bolts.
- Rotate the rear camber adjusting bolt until the correct value is obtained.
- Repeat the above procedure for the other side.
- Tighten the rear camber adjusting bolts.



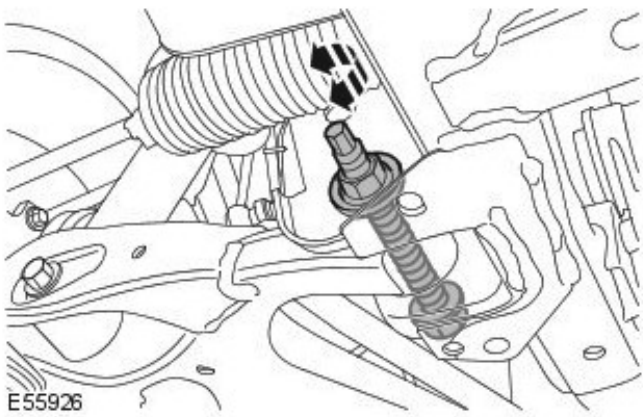
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10. Adjust the rear toe.

- Loosen the toe link adjustment locking nut.
- Rotate the toe link inner ball joint until the correct rear toe value is obtained.
- Tighten the toe link adjustment locking nut to 130 Nm (96 lb.ft).
- Repeat the above procedure for the other side.
- Repeat the rear toe measurement.



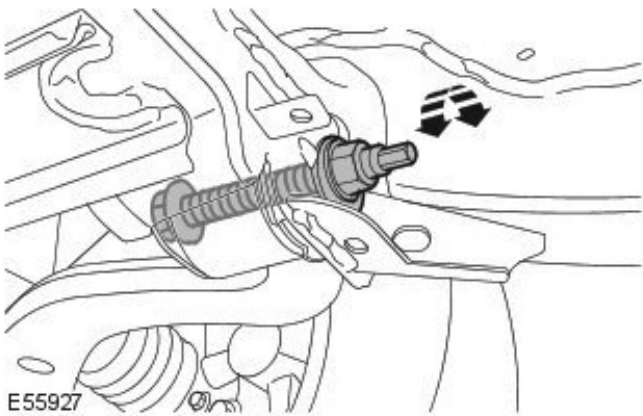
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11.  CAUTION: Make sure the slip plates (turntables) are free to move before adjusting the geometry.

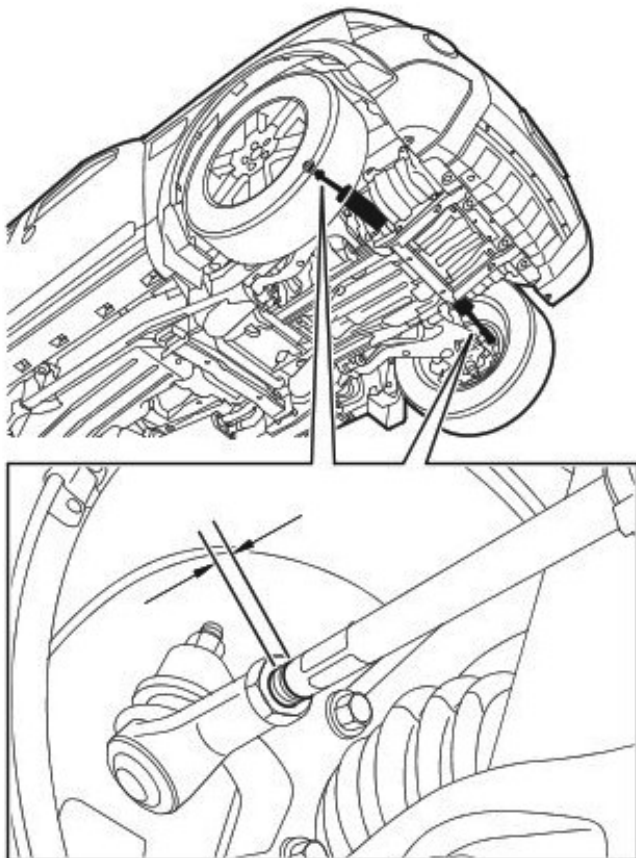
Adjust the front camber.

- Loosen the lower arm front camber adjusting bolt.
- Rotate the front camber adjusting bolt until the correct value is obtained.
- Tighten the lower arm front camber adjusting bolt to 275 Nm (203 lb.ft).
- Repeat the above procedure for the other side.



12. Adjust the front castor.

- Loosen the lower arm rear castor adjusting bolt.
- Rotate the castor adjusting bolt until the correct value is obtained.
- Tighten the lower arm rear castor adjusting bolt.
- Repeat the above procedure for the other side.
- Repeat the castor measurement.
- Repeat the above procedure until both castors achieve the correct value.
- Tighten the lower arm rear castor adjusting bolts to 275 Nm (203 lb.ft).



13. Align the steering to straight ahead.

- Measure the length of the exposed thread on each track rod.
- If the exposed thread lengths differ by more than two millimeters:
- Stage one: Loosen one track rod end locking nut.
- Stage two: Rotate the track rod until the lengths of the exposed threads on both track rods are equal.
- Stage three: Tighten the track rod end locking nut.
- Stage four: Rotate the steering wheel until both front toe measurements are equal.

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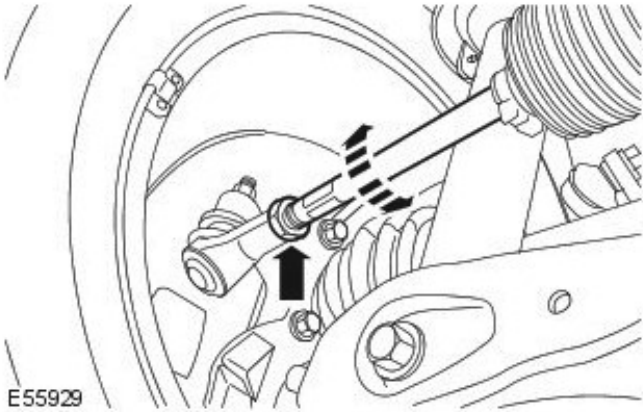
14. If the steering wheel is more than three degrees from the

straight ahead position, remove the steering wheel and reposition on the nearest spline to the straight ahead position.
For additional information, refer to: [Steering Wheel](#) (211-04 Steering Column, Removal and Installation).

- Align the steering wheel to straight ahead.


15. Adjust the front toe.

- Loosen the track rod end locking nuts.
- Rotate the track rods to adjust each individual front toe to the correct value.
- Tighten the track rod end locking nuts to 53 Nm (39 lb.ft).



16. Using the diagnostic tool, return the vehicle to 'Normal Mode'.

1. Select the 'Configuration' tab
2. Select 'Set up and Configure'.
3. Select 'Air Suspension'.
4. Select 'Suspension Geometry Set Up'.
5. Select 'Normal Mode'.
6. Follow the on-screen instructions until the normal mode process has finished.

17.  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

18. Remove the rear wheels and tires.

19. Tighten the rear camber adjusting bolts to 133 Nm (98 lb.ft).

20. Install the wheels and tires.

- Tighten the wheel nuts to 140 Nm (103 lb.ft).

21. Calibrate the steering angle sensor using the diagnostic tool.

Front Suspension -

General Specifications

Item	Specification
Gap between underside of the toe link rubber boot and the chassis bracket	12.0 mm (0.473 in)
Height/distance between centre of halfshaft and edge of the fender trim	462 mm (18.19 in)

Torque Specifications

Description	Nm	lb-ft
* Stabilizer bar link nuts	175	129
Stabilizer bar clamp nuts	115	85
Front axle crossmember bolts	115	85
Shock absorber and spring assembly to lower arm bolt	300	221
Shock absorber top mounting nuts	70	52
* Shock absorber upper bush rebound plate nut	98	72
Heat shield bolts	10	7
* Upper arm and wheel knuckle nut	70	52
* Tie-rod end ball joint nut	70	52
Brake hose retaining bracket to wheel knuckle bolt	25	18
*+ Halfshaft retaining nut	230	169
Brake hose to upper arm bolt	22	16
Upper arm nuts and bolts	175	129
Radiator access panel bolts	10	7
Wheel hub bolts	115	85
Brake disc dust shield bolts	10	7
Lower arm bolts	275	203
Lower arm ball joint retaining nut	115	85
Lower arm front camber adjusting bolt	275	203
Lower arm rear castor adjusting bolts	275	203
Toe link inner ball joint retaining nut	133	98
Rear camber adjusting bolts	133	98
Track rod end locking nuts	53	39
Wheel speed sensor bolt	10	7
Axle carrier bushing bolt - M14	105	77
Axle carrier bracket bolts	80	59
Road wheel nuts	140	103

* **New nut/bolts must be installed**

+ **Stake nut on completion**

Front Suspension - Front Suspension

Description and Operation

Front Suspension Component Layout

- NOTE: Without Dynamic Response version shown