

Lean Correction

Special Tool(s) / General Equipment

Vehicle/Axle Stands

Materials

Name	Specification
Motorcraft® Threadlock and Sealer - TA-25-B	

Check

Front And Rear Lean Verification And Correction

- NOTE:** When verifying the vehicle lean, all tires must be inflated to the correct specifications and all equipment must be removed from the vehicle, such as tool boxes, caps and bed fuel tanks. The vehicle must also be parked on a level surface, such as an alignment rack.

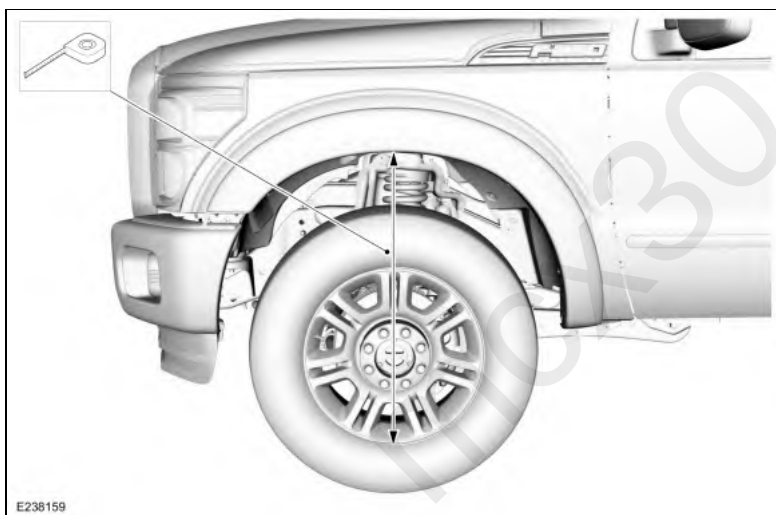
Inspect all 4 tires for correct inflation, adjust as necessary.

- Refer to the Safety Certification sticker located on driver door jamb.

- NOTE:** Front measurement shown, rear measurement similar.

NOTE: On vehicles equipped with DRW, the front wheel well opening measurement may be more accurate when measured from the upper wheel lip to the front fender wheel well opening.

With the vehicle on a level surface, such as an alignment rack and the suspension at curb height, measure the vertical height from the lower wheel lip to the fender wheel well opening. Repeat on the remaining wheels. Record the measured values.



- Using the wheel well opening measurements, take the smaller measured value and subtract it from the larger measured value, this is the wheel well difference number. Record this number.
 - If the side-to-side difference is less than 16 mm (5/8 in), the vehicle is within specification and no action is to be taken. If the wheel well opening difference is greater than 16 mm (5/8 in), proceed to the next step.
- Measure chassis ride height on both the front and rear of vehicle and record the measured values. Refer to: Ride Height Measurement (204-00 Suspension System - General Information, General Procedures).
- Using the front chassis ride height measurements, take the smaller measured value and subtract it from the larger measured value. This is the chassis ride height difference number. Record this number.
 - Repeat the calculation using the rear measurements.
- NOTE:** If the chassis ride height difference is less than 16 mm (5/8 inch) no chassis repair is authorized.

Investigate the frame and body systems.

Front Lean Correction Chart

Front Wheel Well Opening Difference	Chassis Ride Height Difference Left to Right	Action

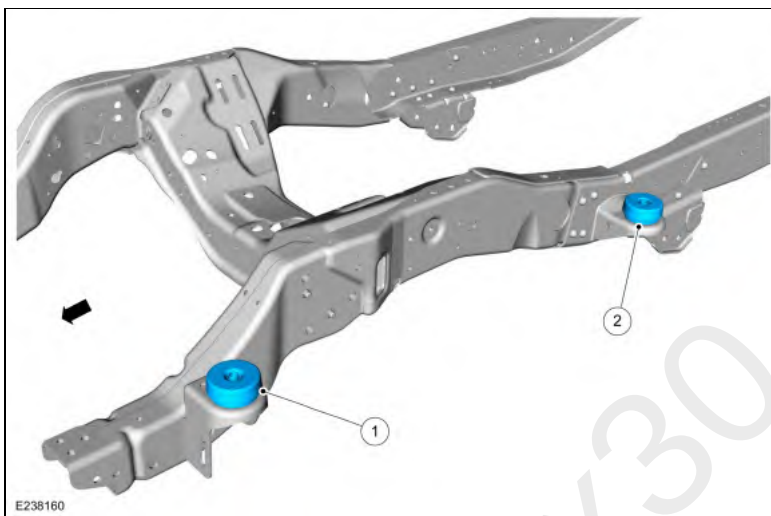
Front Wheel Well Opening Difference	Chassis Ride Height Difference Left to Right	Action
Less than 16 mm (5/8 in)	N/A	No action to be taken.
16 mm and greater (5/8 in and greater)	Less than 16 mm (5/8 in)	No chassis correction authorized, investigate frame and body systems. Refer to front lean correction - Frame and Body. Install body mount shim F81Z-1000145-BA on low side of vehicle as required. Up to 5 shims at FESM and #1 mount.
16 mm and greater (5/8 in and greater)	16 mm and greater (5/8 in and greater)	Refer to front lean correction - Chassis Suspension. Install new spring. Refer to: Spring - F-250/F-350 (204-01A Front Suspension - RWD, Removal and Installation). or Refer to: Spring - F-450/F-550 (204-01A Front Suspension - RWD, Removal and Installation). or Refer to: Spring (204-01B Front Suspension - 4WD, Removal and Installation).

Front Lean Correction - Frame And Body

NOTE: Use this procedure when front wheel well recorded difference 16 mm (5/8 in) or greater and chassis ride height recorded difference is less than 16 mm (5/8 in).

7.

1. (00155) = Front End Sheet Metal (FESM) Mount
2. (00155) = #1 Body Mount

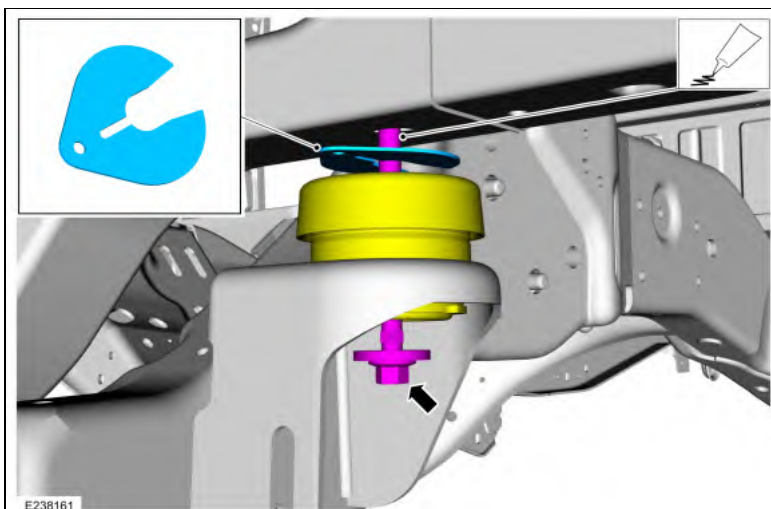


8. Investigate frame and body systems for misalignment or damage; bumper alignment, cab to box alignment, body mount damage etc. Correct assignable causes.
 - If after adjustment the measured wheel well opening difference remains 16 mm (5/8 inch) or greater, install body mount shims on low side of vehicle as required at the FESM mount (forward of the front wheel well opening) and #1 body mount (immediately rearward of front wheel well opening) using up to 5 shims per mount.
9. **NOTE:** The body support mount bolts must be thoroughly cleaned using a wire brush or wire wheel and Motorcraft® Threadlock and Sealer applied prior to installation.

Remove the body support mount bolts from the affected side. Raise vehicle cab slightly.

1. Install body mount shim F81Z-1000145-BA at the FESM mount and #1 body mount between the floor pan and the mount. Up to 5 shims per mount as needed.
2. Lower vehicle cab and install the body support mount bolts and torque to 103 Nm (76 lb-ft).
- Clean the bolts using a wire brush or wire wheel and apply Motorcraft® Threadlock and Sealer to the threads of all body support mount bolt(s).

Material: Motorcraft® Threadlock and Sealer / TA-25-B



10. Adjust front bumper as required for level appearance.

Refer to: Body and Frame (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).

All vehicles

NOTE: Correcting the front or rear lean condition will have an effect on the other lean condition.

NOTE: If the recorded front wheel well difference number is greater than the rear, correct the front lean condition before correcting any rear lean conditions.

11. Inspect the front springs for any signs of damage (fractured or broken) and ensure proper orientation of the springs in the isolators; spring end against the isolator stop.
 - If a spring or isolator is damaged, install a new component and re-evaluate the vehicle. Refer to the appropriate section in Group 204 for the procedure.
 - If no damage is identified and the lean is not corrected proceed to next step.
12. Remove the high side front coil spring. Refer to the appropriate section in Group 204 for the procedure.
13. Compare the height of the original front coil spring with a new one with the same part number. Note the difference.
14. Compare all 3 front coil springs and select the 2 most evenly matched for installation.
15. From the 2 most evenly matched coil springs, select the taller and install it on the lower side of the vehicle. Install the shorter of the 2 on the higher side of the vehicle. Refer to the appropriate section in Group 204 for the procedure.
16. If the original front coil spring exceeds the height of the new spring by 13 mm (1/2 in), install the new front coil spring in the vehicle.
Refer to: Spring - F-250/F-350 (204-01A Front Suspension - RWD, Removal and Installation).
Refer to: Spring - F-450/F-550 (204-01A Front Suspension - RWD, Removal and Installation).
Refer to: Spring (204-01B Front Suspension - 4WD, Removal and Installation).
17. If the original front coil spring is shorter than the new spring by at least 13 mm (1/2 in), remove the low side front coil spring from the vehicle.
Refer to: Spring - F-250/F-350 (204-01A Front Suspension - RWD, Removal and Installation).
Refer to: Spring - F-450/F-550 (204-01A Front Suspension - RWD, Removal and Installation).
Refer to: Spring (204-01B Front Suspension - 4WD, Removal and Installation).

All vehicles

NOTE: If the recorded rear wheel well difference number is greater than the front, correct the rear lean condition before correcting any front lean conditions.

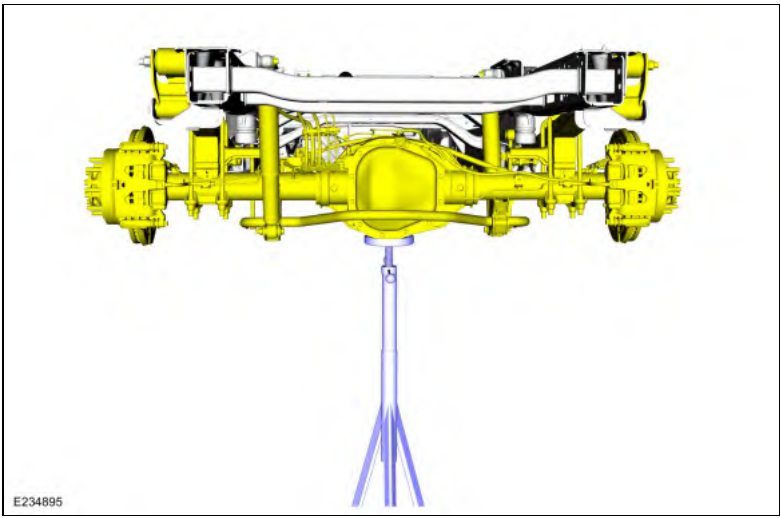
18. Using the recorded wheel well difference numbers, the recorded chassis ride height difference numbers and the following repair action chart, determine what repair action is needed to correct the vehicle lean condition.

Rear Lean Correction Chart

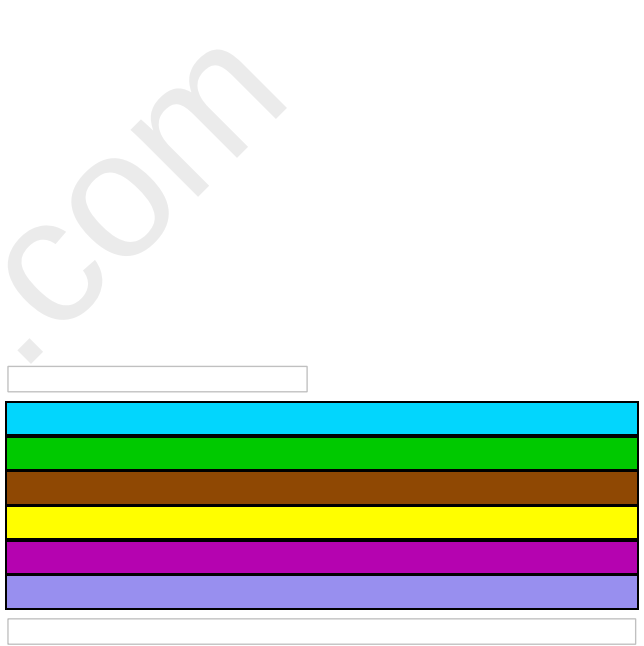
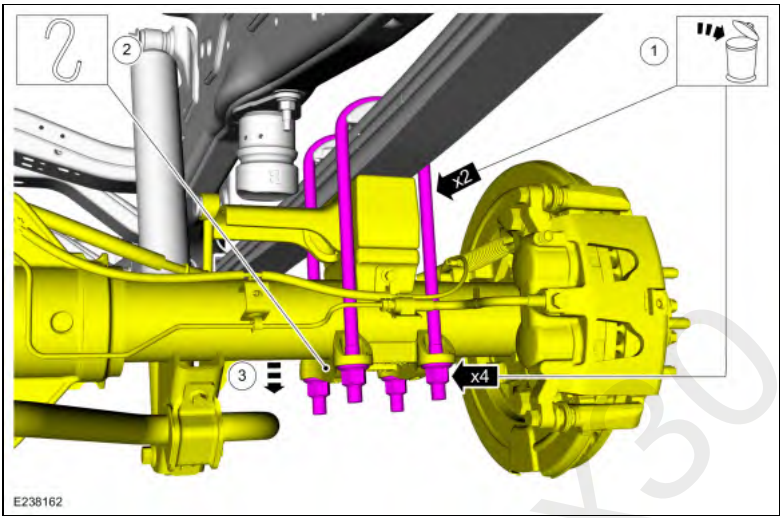
Wheel Lip to Wheel Well Difference Left to Right	Chassis Ride Height Difference Left to Right	Action
0 to 19 mm (0 to 3/4 in)	N/A	No action to be taken.
Greater than 19 mm (3/4 in)	Less than 19 mm (3/4 in)	No chassis correction authorized, investigate frame and body systems. Refer to: Body System (501-00 Body System - General Information, Diagnosis and Testing).
Greater than 19 mm (3/4 in)	19 to 25 mm (3/4 in to 1 in)	Install shim 3C4Z-5A300-AA on low side of vehicle. Continue with service procedure below.
Greater than 19 mm (3/4 in)	Greater than 25 to 38 mm (1 in to 1-1/2 in)	Install shim 5C3Z-5742-AA on low side of vehicle. Continue with service procedure below.
Greater than 19 mm (3/4 in)	38 mm and greater (1-1/2 in and greater)	Install new spring. Refer to: Spring - F-250/F-350 (204-02 Rear Suspension, Removal and Installation). or Refer to: Spring - F-450/F-550 (204-02 Rear Suspension, Removal and Installation).

NOTE: If shim installation is required, continue with this procedure.

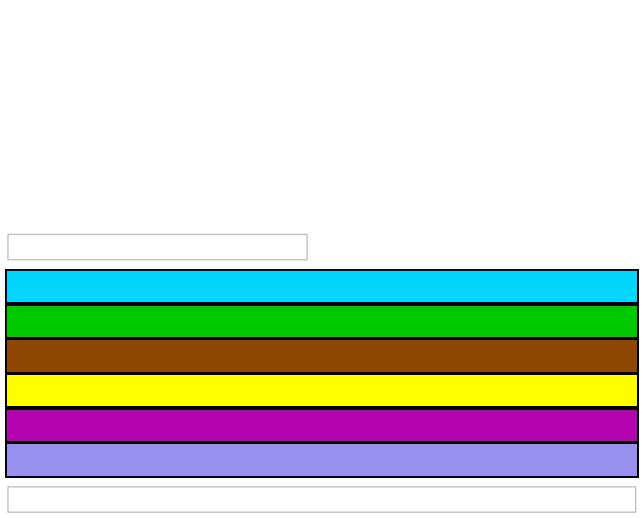
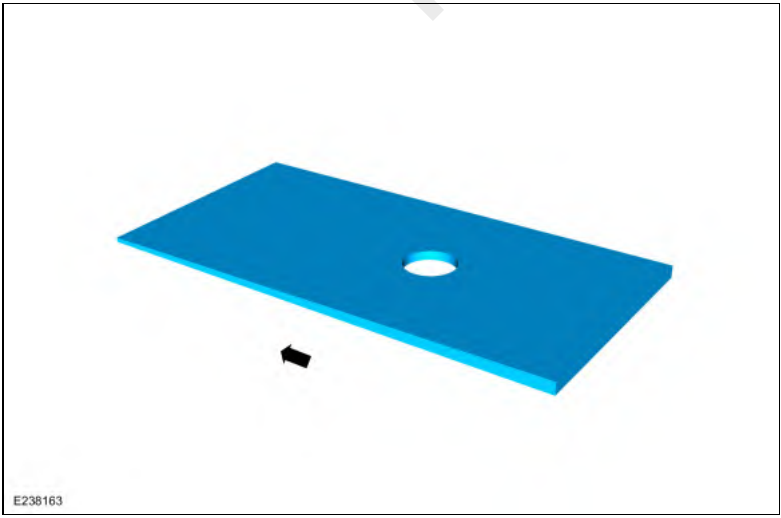
19. Support the axle assembly.
Use the General Equipment: Vehicle/Axle Stands



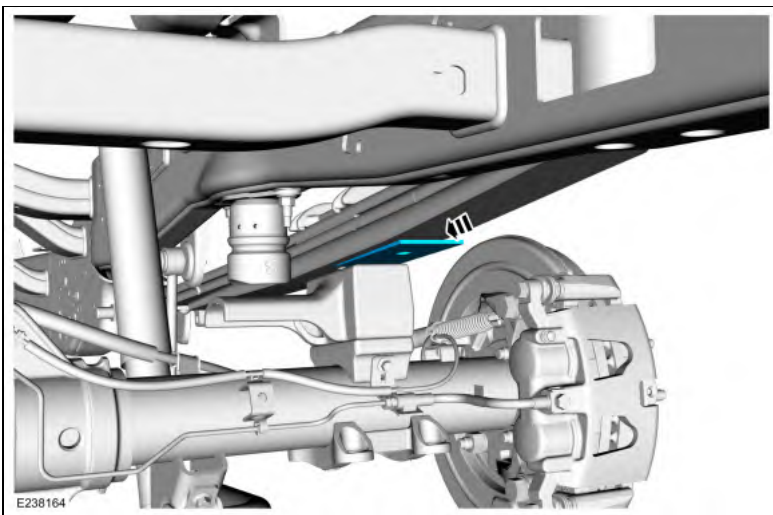
- 20.
1. Remove and discard the U-bolt nuts and U-bolts.
 2. Support the bottom plate.
 3. Lower the rear axle slightly to provide sufficient space to install shim.



21. Position the shim with the taper towards the front of the vehicle.



22. Insert the shim between the rear spring and the spring seat.
- Position the shim so the center bolt through the spring leafs is in the hole in the shim, the stud on the bottom of the shim is in the spring seat recess and the shim is aligned with the rear spring.



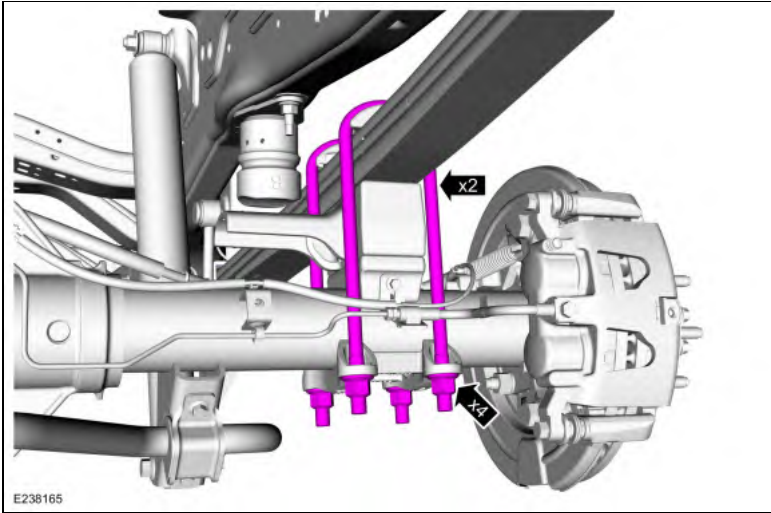
23. **NOTE:** If thicker shims are installed, the new U-bolts (5705) may need to be longer than the original U-bolts. Use the table below to assist with U-bolt selection.

Install the new U-bolts and the new U-bolt nuts. Tighten the nuts evenly in a cross-type pattern in 4 stages.

- SRW Vehicles
Torque:
Stage 1: 48 lb.ft (65 Nm)
Stage 2: 96 lb.ft (130 Nm)
Stage 3: 148 lb.ft (200 Nm)
Stage 4: 195 lb.ft (265 Nm)
- DRW Vehicles
Torque:
Stage 1: 74 lb.ft (100 Nm)
Stage 2: 148 lb.ft (200 Nm)
Stage 3: 221 lb.ft (300 Nm)
Stage 4: 295 lb.ft (400 Nm)
- **U-Bolt Length Chart**

NOTE: DRW vehicles use larger diameter U-Bolts. M18.

Length (mm)	Prefix	Base	Suffix
265	BC3Z	5705	E
292	BC3Z	5705	K
318	BC3Z	5705	H
330	BC3Z	5705	F
345	BC3Z	5705	D
365	BC3Z	5705	C
385	BC3Z	5705	G
420	BC3Z	5705	A
445	BC3Z	5705	L
335	HC3Z	5705	A
375	HC3Z	5705	C
430	HC3Z	5705	B
405	HC3Z	5705	D



24. Remove the support from the axle.
25. Install new spring(s) as necessary.
Refer to: Spring - F-250/F-350 (204-02 Rear Suspension, Removal and Installation).
Refer to: Spring - F-450/F-550 (204-02 Rear Suspension, Removal and Installation).

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