

## **WARNING**

**MODIFYING AN ORIGINAL EQUIPPED VEHICLE WILL RESULT IN A VEHICLE HANDLING DIFFERENTLY. ALL TYPES OF SUSPENSION MODIFICATIONS WILL AFFECT REACTION, RIDE, HANDLING AND WEAR AND TEAR RATE OF A VEHICLE AND ITS COMPONENTS. ABRUPT MANEUVERS, SHARP AND SUDDEN TURNS AND WEATHER CONDITIONS WILL INCREASE THE VEHICLE'S SUSCEPTIBILITY FOR LOSS OF CONTROL. DEATH AND SERIOUS INJURY COULD BE THE RESULT IF YOU FAIL TO OPERATE A MODIFIED VEHICLE SAFELY. KNOW AND FOLLOW THE LAWS OF THE STATES.**

**READ INSTRUCTIONS COMPLETELY THROUGH BEFORE STARTING.**

FAILURE TO ADHERE TO THE INSTRUCTIONS WILL VOID ANY GROUND FORCE WARRANTY  
IT IS RECOMMENDED THAT INSTALLATION BE DONE BY A QUALIFIED MECHANIC.

REPLACE ALL STOCK PARTS THAT ARE DAMAGED OR WORN.

INTERMIXING OF PARTS IS NOT RECOMMENDED AND WILL VOID THE WARRANTY.

ALWAYS WEAR EYE PROTECTION.

ALWAYS USE PROPERLY RATED SAFETY STANDS WHENEVER A PROCEDURE REQUIRES  
YOU TO BE UNDER A VEHICLE. KNOW AND FOLLOW ALL SAFE WORK PRACTICES TO AVOID  
SERIOUS INJURY OR DEATH.

CHECK TO SEE THAT ALL PARTS LISTED ARE INCLUDED.

- 1-INSTRUCTION SHEET
- 1-GROUND FORCE WARNING DECAL
- 2-SHACKLES
- 2-FRONT COIL SPRINGS
- 2-REAR AXLE SHIMS
- 4-UBOLTS
- 8-WASHERS
- 8-UBOLT NUTS
- 4-URETHANE SHACKLE BUSHINGS
- 2-SHACKLE SLEEVES
- 2-GREASE FITTINGS

**NOTE: AMOUNT OF DROP APPROXIMATE DUE TO FACTORY OPTIONS.**

MEASURE AND DOCUMENT THE VEHICLE HEIGHT FROM FLOOR TO FENDER LIP.

LF \_\_\_\_\_ RF \_\_\_\_\_ LR \_\_\_\_\_ RR \_\_\_\_\_

1. BEFORE GETTING UNDER VEHICLE, REMOVE THE KEYS FROM THE IGNITION. DISCONNECT THE NEGATIVE BATTERY TERMINAL FROM THE BATTERY. DO NOT MOVE THE STEERING OR TIE RODS LEFT OR RIGHT WHILE DOING THIS INSTALLATION AS MISALIGNMENT OF THE ELECTRONIC STEERING SYSTEM MAY RESULT. JACK THE FRONT OF VEHICLE UP AND PLACE STANDS UNDER THE FRAME RAILS. LOWER THE VEHICLE ONTO JACK STANDS AND MAKE SURE STANDS ARE SECURELY HOLDING THE VEHICLE.
2. REMOVE TIRE AND WHEEL ASSEMBLY.
3. REMOVE THE UPPER CONNECTING LINK HARDWARE FROM THE SWAY BAR ON BOTH SIDES OF VEHICLE, SAVE HARDWARE.



**UPPER SWAY  
BAR LINK  
HARDWARE**

**SPLASH  
SHIELD**



4. LOCATE THE SPLASH SHIELD BEHIND THE LOWER CONTROL ARM REAR BOLTS AND REMOVE THE FOUR BOLTS HOLDING THE SPLASH SHIELD TO THE FRAME BRACKETS (THIS WILL ALLOW YOU TO LOOSEN AND REMOVE THE REAR SET OF LOWER CONTROL ARM BOLTS).
5. LOOSEN THE OUTER TIE ROD NUT, TAP ON THE SPINDLE WITH A MALLET TO POP THE TIE ROD JOINT LOOSE FROM THE SPINDLE. REMOVE THE OUTER TIE ROD FROM THE SPINDLE, SAVE NUT, REPEAT TO THE OTHER SIDE OF VEHICLE.

6. THE LOWER CONTROL ARM FRAME MOUNTS HAVE FACTORY ALIGNMENT SLOTS AND MUST BE MARKED BEFORE LOOSING. THIS PROCEDURE WILL AID IN ADJUSTING THESE BOLTS BACK TO THE CORRECT LOCATION DURING FINAL ASSEMBLY. REFER TO THE PHOTO BELOW

A. USING A PAINT STICK MARK ALL FOUR LOWER CONTROL ARM MOUNTING BOLT LOCATIONS.

B. LOOSEN BUT DO NOT REMOVE THE FOUR LOWER CONTROL ARM TO FRAME MOUNT BOLTS. THIS NEEDS TO BE DONE SO THAT THE LOWER CONTROL ARM WILL SWING DOWN FAR ENOUGH TO BE ABLE TO REMOVE THE STRUT ASSEMBLY FROM THE VEHICLE. SUPPORT THE LOWER CONTROL ARM.



**LOWER CONTROL ARM TO FRAME  
MOUNTING HARDWARE.**

**PAINT STICK MARK SHOWING  
FACTORY HARDWARE LOCATION.**

7. MARK THE UPPER AND LOWER STRUT MOUNTS SO THAT WHEN YOU INSTALL THE NEW COIL SPRINGS YOU WILL BE ABLE TO ALIGN THE UPPER AND LOWER STRUT MOUNTS IN THEIR CORRECT LOCATION. MARK THE STRUT ASSEMBLY LEFT AND RIGHT.



**UPPER AND  
LOWER STRUT  
INDEX MARKS**



8. LOOSEN AND REMOVE THE TWO LOWER STRUT MOUNTING NUTS LOCATED UNDER THE LOWER CONTROL ARM, SAVE HARDWARE.



**LOWER STRUT MOUNTING HARDWARE LOCATION.**

**WARNING: THE COIL SPRING ASSEMBLY IS UNDER PRESSURE, DO NOT REMOVE THE CENTER UPPER STRUT ROD NUT.**

9. LOOSEN THE UPPER THREE OUTER NUTS ATTACHING THE STRUT ASSEMBLY TO THE VEHICLE FRAME.
10. SUPPORT THE LOWER CONTROL ARM NOTE THE DIRECTION OF THE MOUNTING HARDWARE THAT ATTACHES THE LOWER CONTROL ARM A TO FRAME MOUNTS. REMOVE THE LOWER CONTROL ARM TO FRAME HARDWARE (REFER TO PHOTOS BELOW).
11. LOWER THE JACK SLIGHTLY UNDER THE LOWER CONTROL ARM, REMOVE THE UPPER OUTER THREE STRUT TO FRAME NUTS AND REMOVE THE STRUT ASSEMBLY FROM THE VEHICLE. SAVE HARDWARE.

**DRIVERS SIDE FRONT SHOWN WITH STRUT REMOVED**

**LOWER CONTROL ARM BEING LOWERED AWAY FROM LOWER STRUT MOUNTING STUDS**



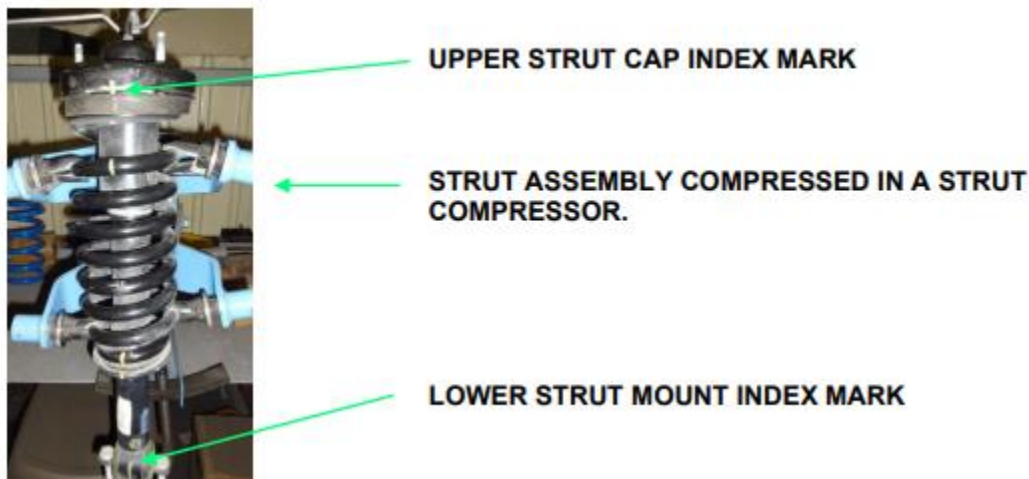
12. REPEAT STRUT REMOVAL PROCEDURE TO OTHER SIDE OF VEHICLE.

13. NEW COIL SPRING INSTALLATION PROCEDURE.

14. COIL SPRING INDEXING.

A. AGAIN IT IS VERY IMPORTANT TO PLACE INDEX MARKS ON THE UPPER AND LOWER STRUT SPRING MOUNTS SO THAT ONCE THE STRUT IS DISASSEMBLED AND REASSEMBLED YOU CAN ALIGN THE UPPER AND LOWER MOUNTS IN THE CORRECT LOCATION.

15. COMPRESS THE STRUT ASSEMBLY STOCK COIL SPRING USING A STRUT/COILOVER COMPRESSOR. FOLLOW THE STRUT/COILOVER COMPRESSOR INSTRUCTIONS.



16. ONCE THE SPRING IS COMPRESSED REMOVE THE CENTER UPPER STRUT ROD NUT WHILE HOLDING THE STRUT SHAFT FROM SPINNING INSIDE OF THE STRUT. SAVE HARDWARE

- A. REMOVE THE UPPER STRUT MOUNT FROM THE STRUT.
- B. REMOVE THE UPPER RUBBER SPRING SEAT FROM THE STRUT.
- C. REMOVE THE STRUT FROM THE COIL SPRING.
- D. REMOVE THE STOCK COIL FROM THE STRUT/COILOVER COMPRESSOR.

17. COIL TO STRUT SHOCK INSTALLATION PROCEDURE. FOLLOW THE STRUT/COILOVER COMPRESSOR INSTRUCTIONS.

**WARNING:** THE COIL IS UNDER PRESSURE. EXTREME CARE MUST BE TAKEN WHEN AND INSTALLING THE COILS TO AVOID INJURY.

- A. INSTALL THE NEW GROUND FORCE COIL INTO THE COILOVER/STRUT COMPRESSOR  
(SMALL END GOES DOWN)AND COMPRESS THE NEW COIL.
- B. INSTALL THE STOCK STRUT UP THROUGH THE NEW DROP COIL.
- C. INSTALL THE STOCK UPPER RUBBER ISOLATOR AND TOP HAT ONTO THE TOP OF THE COIL. MAKE SURE THAT THE UPPER COIL IS LOCATED AGAINST THE UPPER COIL STOP AND THAT THE RUBBER ISOLATOR IS LOCATED CORRECTLY IN THE SPRING SEAT. SEE THE PHOTO BELOW.

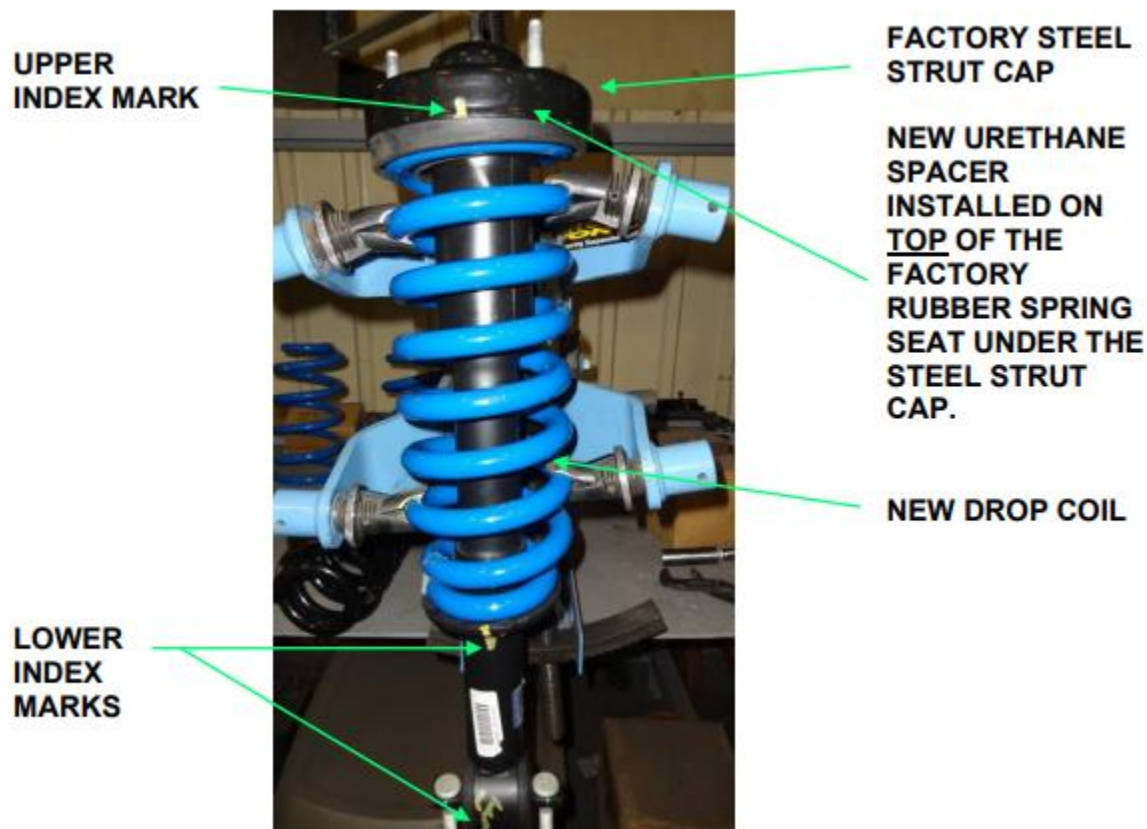


D. LOCATE THE UPPER SPRING SEAT INDEX MARK AND ALIGN IT WITH THE WITH THE LOWER SPRING SEAT INDEX MARK (INDEX MARKS FROM STEP 7 ).

E. INSTALL THE UPPER STRUT CENTER RETAINING NUT TO THE STRUT SHAFT AND TORQUE THE STRUT SHAFT RETAINING NUT TO SPEC OF 41 Ft/lbs (55Nm)

F. ONCE THAT YOU ARE SURE THE COIL IS LOCATED CORRECTLY ON THE STRUT REMOVE THE STRUT/COIL ASSEMBLY FROM THE COMPRESSOR. FOLLOW THE STRUT COMPRESSOR INSTRUCTIONS.

G. REPEAT COIL INSTALLATION TO THE OTHER STRUT.



18. STRUT TO VEHICLE INSTALLATION.
- A. INSTALL THE STRUT ASSEMBLY UP INTO THE STOCK LOCATION.
  - B. ALIGN AND INSTALL THE THREE STUDS UP INTO THE THREE HOLES IN THE FRAME UPPER MOUNT.
  - C. INSTALL THE FACTORY THREE UPPER STRUT LOCKNUTS (JUST START THE NUTS AS THE UPPER STRUT MOUNT WILL NEED TO MOVE SOME WHEN THE LOWER STRUT STUDS ARE BEING LINED UP WITH THE LOWER CONTROL ARM).
  - D. JACK UP THE LOWER CONTROL ARM AND LINE UP THE LOWER STRUT MOUNTING STUDS INTO THE LOWER CONTROL ARM AND JUST START THE FACTORY LOWER STRUT RETAINING NUTS.
  - E. CONTINUE TO JACK UP THE LOWER CONTROL ARM LINING UP THE CONTROL ARM INTO THE FRAME MOUNTING POCKETS, REINSTALL THE FACTORY LOWER CONTROL ARM TO FRAME MOUNTING HARDWARE IN THE SAME DIRECTION AS REMOVED JUST START THE NUTS.
  - F. INSTALL THE CONNECTING LINK UP INTO THE SWAY BAR AND JUST START THE FACTORY RETAINING NUT.
  - G. REPEAT STRUT INSTALLATION PROCEDURE TO THE OTHER SIDE OF VEHICLE.
  - I. TORQUE THE LOWER STRUT MOUNTING HARDWARE TO THE TORQUE SPEC OF 66FT/LBs.
19. REPOSITION THE JACK OUT TOWARD THE SPINDLE SIDE OF THE LOWER CONTROL ARM AND JACK THE SUSPENSION UP TO RIDE HEIGHT (MAKE SURE YOUR SAFETY STANDS ARE SECURE UNDER THE VEHICLE). WITH THE HELP OF AN ASSISTANT LINE UP THE LOWER CONTROL ARM MOUNTING HARDWARE TO THE MARKS MADE IN STEP NO 6 AND TORQUE THE LOWER CONTROL ARM TO FRAME MOUNTING BOLTS TO THE TORQUE SPEC OF 258ft/lbs (350Nm). REPEAT TO THE OTHER SIDE OF VEHICLE.
20. TORQUE THE UPPER THREE STRUT NUTS TO THE TORQUE SPEC OF 52FT/lbs (70Nm)
21. WITH THE STRUT AND LOWER CONTROL ARM NOW TIGHTENED TO SPEC LOWER THE JACK UNDER THE LOWER CONTROL ARM UNTIL THE SUSPENSION IS FREE HANGING (4X4 MODELS).
- A. WITH THE STEERING TIE RODS STILL DISCONNECTED TURN THE STEERING KNUCKLES FROM COMPLETE LEFT LOCK TO COMPLETE RIGHT LOCK BY HAND AND VERIFY THAT YOU HAVE CLEARANCE BETWEEN THE LOWER STRUT MOUNT AND THE OUTER CV BOOT AS SHOWN BELOW. THIS SYSTEM WAS DESIGNED TO HAVE CLEARANCE WITH FACTORY CV BOOTS.



**4X4 MODELS  
CLEARANCE BEING  
CHECKED BETWEEN THE  
OUTER CV BOOT AND  
THE LOWER STRUT  
MOUNT. MAINTAIN A  
MINIMUM OF 1/8" AT THE  
CLOSEST POINT WITH  
THE SUSPENSION  
HANGING IN THE FULL  
DROOP POSITION.**

23. REINSTALL THE TIE RODS TO THE SPINDLES AND TORQUE TO THE SPEC OF 66Ft/lbs (90Nm)
24. TORQUE THE UPPER CONNECTING LINK NUTS TO SPEC OF 150Ft/lbs (150Nm) ON BOTH SIDES OF THE VEHICLE.
25. REINSTALL THE SPLASH SHIELD INTO THE FACTORY POSITION AND INSTALL THE FACTORY HARDWARE AND TORQUE TO SPEC.
26. MAKE SURE ALL FASTENERS AFFECTED BY THIS PROCEDURE ARE TORQUED TO SPEC.
27. REINSTALL TIRE AND WHEEL ASSEMBLY AND TORQUE TO SPEC.
28. CHECK AND MAKE SURE THAT ALL INSTALLATION STEPS HAVE BEEN COMPLETED. CHECK ALL NUTS AND BOLTS FOR TORQUE AFTER THE FIRST 300 MILES.
29. JACK THE VEHICLE UP AND REMOVE STANDS, THEN LET THE VEHICLE DOWN AND RECONNECT THE NEGATIVE BATTERY TERMINAL ON THE BATTERY.
30. MAKE SURE THERE ARE NO CLEARANCE PROBLEMS. ROTATE THE STEERING LOCK TO LOCK UNDER FULL WEIGHT OF THE VEHICLE AND FULL SUSPENSION TRAVEL.



## REAR INSTALL

**NOTE: AMOUNT OF DROP APPROXIMATE DUE TO FACTORY OPTIONS AND OR AFTERMARKET OPTIONS.**

31. JACK UP THE REAR OF THE VEHICLE AND PLACE JACK STANDS UNDER THE FRAME RAILS. LOWER THE VEHICLE ONTO THE JACK STANDS AND MAKE SURE THE STANDS ARE SECURELY HOLDING THE VEHICLE. SUPPORT THE REAR AXLE WITH A FLOOR JACK AND SMALL JACK STANDS.

32. REMOVE THE REAR TIRE WHEEL ASSEMBLY.

**WARNING: THE LEAF SPRINGS ARE UNDER PRESSURE. EXTREME CARE MUST BE TAKEN WHEN WORKING WITH THE SPRINGS TO AVOID INJURY.**

33. SUPPORT THE REAR AXLE.

34. REMOVE THE STOCK REAR SHOCKS FROM THE LOWER MOUNTS, SAVE HARDWARE.

35. REMOVE THE U-BOLTS FROM ONE SIDE AND LET THE REAR AXLE DOWN UNTIL THE FACTORY BLOCK CAN BE REMOVED (IF EQUIPPED, BLOCK NOT PRESENT ON SOME 4X2 MODELS)

A. REMOVE THE FACTORY BLOCK AND DISCARD.

36. INSTALL THE WEDGE ON TOP OF THE AXLE WITH THE THICKER END OF THE WEDGE TOWARD THE REAR OF THE VEHICLE.



**WEDGE INSTALLED WITH THE THICK END TOWARD THE REAR OF THE VEHICLE.**

**NEW U-BOLTS**

**PLASTIC RETAINING CLIPS**

37. JACK THE AXLE UP AND LINE UP THE CENTER PIN HEADS THROUGH THE WEDGES AND INTO THE AXLE PIN HOLES.
- A. INSTALL THE NEW U-BOLTS AND U-BOLT HARDWARE.
  - B. SNUG THE U-BOLT NUTS MAKING SURE THE CENTER PIN HEADS STAY IN THE AXLE CENTER PIN HOLES.
  - C. REPEAT THE BLOCK REMOVAL AND WEDGE INSTALLATION TO THE OTHER SIDE OF THE VEHICLE.
  - D. TORQUE THE REAR LEAF SPRING IN A CROSS PATTERN IN THE FOLLOWING 4 STAGES
    - Stage 1: 30 lb.ft (40 Nm)
    - Stage 2: 59 lb.ft (80 Nm)
    - Stage 3: 89 lb.ft (120 Nm)
    - Stage 4: 111 lb.ft (150 Nm)
  - E. IF EQUIPPED REATTACH THE PLASTIC RETAINING CLIPS OVER THE U-BOLTS.

**WARNING: THE LEAF SPRING ARE UNDER PRESSURE. EXTREME CARE MUST BE TAKEN WHEN REMOVING AND INSTALLING THE SHACKLES TO AVOID INJURY.**

38. REAR SHACKLE REMOVAL. MAKE SURE THE JACK STANDS ARE SECURE UNDER THE VEHICLE FRAME.
- A. NOTE THE STOCK SHACKLE HARDWARE LOCATION AND DIRECTION OF THE BOLT HEADS.
  - B. LOOSEN THE LOWER SHACKLE TO FRAME BOLT.
  - C. LOOSEN THE UPPER SHACKLE TO SPRING EYE BOLT.

D. WITH THE REAR AXLE SUPPORTED REMOVE THE LOWER SHACKLE BOLTS, SAVE ALL HARDWARE AS IT WILL BE REUSED. PLACE SOME DUCT TAPE ON THE REAR OF THE CROSSMEMBER AS SHOWN BELOW. JACK THE AXLE UP UNTIL THE UPPER SHACKLE BOLTS CAN BE REMOVED OVER THE TOP OF THE FRAME RAIL. THE LEAF SPRING REAR EYE WILL SLIDE UP **BEHIND** THE REAR BED CROSS MEMBER AS SHOWN BELOW. MAKE SURE THE VEHICLE IS SECURE ON THE STANDS AS YOU WILL HAVE TO PUT SOME PRESSURE ON THE JACK TO GET THE SHACKLE HIGH ENOUGH TO GET THE BOLTS TO SLIDE OUT OVER THE FRAME RAILS REMOVE THE UPPER SHACKLE BOLT AND REMOVE THE SHACKLE FROM THE VEHICLE.



**UPPER SHACKLE  
BOLT BEING  
REMOVED OVER THE  
TOP OF THE FRAME**

E. REPEAT TO OTHER SIDE OF VEHICLE.

39. **GREASE** THE NEW SHACKLE BUSHINGS (INSIDE, OUT AND THE FACE OF THE BUSHINGS). **GREASE** THE STEEL SLEEVES AND THE INSIDE OF THE LOWER SHACKLE TUBES. INSTALL THE **GREASED** SHACKLE BUSHINGS AND SLEEVES INTO THE **GREASED** LOWER SHACKLE TUBES. ( HIGH TEMP WHEEL BEARING GREASE WORKS FINE). **NOTE:** IF YOU DO NOT GREASE THESE POINTS **BEFORE** THE SHACKLE IS ASSEMBLED THE BUSHINGS WILL SQUEAK.

40. DROP SHACKLE INSTALLATION.



**REAR SHACKLE INSTALLED  
 WITH OPEN END TOWARD  
 THE FRONT OF VEHICLE.**

**GREASE THE BUSHINGS AND  
 THE FRAME TO BUSHING AREA.**

A. INSTALL THE NEW DROP SHACKLE OVER THE REAR LEAF SPRING EYE WITH THE **OPEN** END OF THE SHACKLE TOWARD THE FRONT.

B. INSTALL THE STOCK UPPER BOLT (WITH THE HEAD INBOARD) THROUGH THE NEW SHACKLE AND THE STOCK LEAF SPRING, INSTALL THE STOCK NUT AND JUST SNUG AT THIS TIME.

C. REPEAT TO THE OTHER SIDE.

41. LOWER THE REAR AXLE SLIGHTLY AND LINE UP BOTH LOWER SHACKLE TO FRAME BOLT HOLES.

A. INSTALL THE STOCK LOWER SHACKLE BOLT (WITH THE HEAD INBOARD) THROUGH THE FRAME AND SHACKLE.

B. INSTALL THE STOCK LOWER SHACKLE NUT AND JUST SNUG AT THIS TIME.

C. REPEAT TO THE OTHER SIDE OF VEHICLE.

42. WITH THE JACK STANDS SECURE UNDER THE VEHICLES FRAME, JACK THE REAR AXLE UP TO RIDE HEIGHT AND TORQUE THE SHACKLE HARDWARE TO THE TORQUE SPEC OF 173Ft/lbs (235Nm)

43. REINSTALL THE REAR SHOCK LOWER MOUNT TO THE VEHICLE USING THE STOCK HARDWARE AND TORQUE TO SHOCK HARDWARE TO THE TORQUE SPEC OF 66Ft/lbs (90Nm)

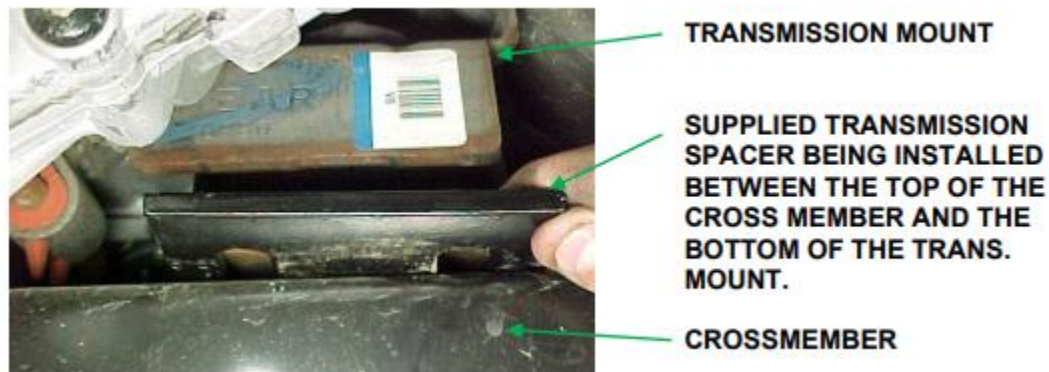
44. REINSTALL THE REAR TIRE AND WHEEL ASSEMBLY. TORQUE THE LUG NUTS TO SPEC. CHECK THE CLEARANCE BETWEEN THE REAR AXLE AND ALL REAR COMPONENTS. ADJUST IF NECESSARY.

**45. TRANSMISSION SPACER INSTALLATION**

A. LOCATE AND REMOVE THE TWO FACTORY REAR TRANSMISSION MOUNTING NUTS (THE NUTS THAT ARE UNDER THE TRANSMISSION CROSSMEMBER).

B. JACK THE TRANSMISSION UP APPROX. 5/16" AND SLIDE THE SPACER OVER THE STUDS BETWEEN THE TOP OF THE CROSSMEMBER AND THE BOTTOM OF TRANSMISSION MOUNT AND INSTALL THE STOCK NUTS JUST SNUG.

C. CENTER THE TRANSMISSION SIDE TO SIDE, LOWER THE JACK AND TORQUE THE TRANSMISSION MOUNT NUTS TO SPEC OF 85Ft/lbs (115Nm)



46. JACK UP THE REAR OF VEHICLE REMOVE SAFETY STANDS AND LOWER VEHICLE.

47. GO BACK AND CHECK THAT ALL INSTALLATION STEPS HAVE BEEN COMPLETED. CHECK THE TORQUE OF ALL NUTS AND BOLTS AFFECTED BY THIS PROCEDURE. RECHECK ALL NUTS AND BOLTS FOR TIGHTNESS AFTER THE FIRST 300 MILES AND AT EVERY ROUTINE SERVICE INSPECTION.

48. MAKE SURE THERE ARE NO CLEARANCE PROBLEMS. ROTATE THE STEERING LOCK TO LOCK UNDER FULL WEIGHT OF THE VEHICLE AND FULL SUSPENSION TRAVEL.





## M-3000-H4B 2021+MY F-150 Rear Lowering Kit

49. MAKE SURE TO INSTALL THE SUPPLIED WARNING DECAL FOLLOWING THE INSTRUCTIONS INCLUDED WITH THE WARNING INFORMATION SHEET.

50. MAKE SURE TO KEEP THESE INSTRUCTIONS WITH THE VEHICLE.

51. READJUST THE HEADLIGHTS TO THE PROPER SETTINGS.

52. ROAD TEST THE VEHICLE.

53. THE VEHICLE NEEDS TO HAVE A FRONT END ALIGNMENT PERFORMED IMMEDIATELY AFTER THE INSTALLATION OF THIS KIT IS COMPLETE. THE FACTORY ADJUSTING BOLTS WILL NEED TO BE SET TO THE FACTORY SPECIFICATIONS.

WARNING: AGAIN CHECK TIRE AND WHEEL CLEARANCE BEFORE MOVING VEHICLE. ALSO CHECK CLEARANCE IF INSTALLING NEW TIRES AND/OR WHEELS.

NOTE: INSTALLATION OF WHEELS WITH BACKSPACING OTHER THAN STOCK MAY CHANGE THE VEHICLE HEIGHT AND ALSO EFFECT THE FRONT END ALIGNMENT.

Procedure for Headlamp Re-aiming.

## Headlamp Adjustment

### 1 All headlamp types

**NOTE:** Refer to the Owner's Literature for the headlamp adjustment screw location.

**NOTE:** Consult your state vehicle inspection manual for recommended tolerance ranges for visual aiming.

**NOTE:** Horizontal aim is not adjustable.

**NOTE:** Record initial vehicle headlamp aim in relation to Optical Center for headlamp aim adjustments

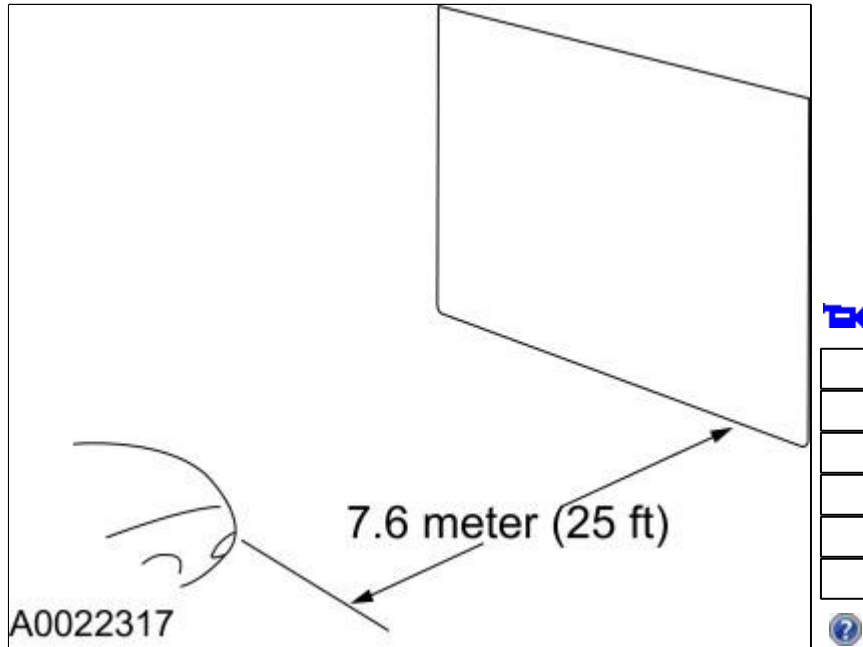
2. Identify the headlamp type. Vehicles are equipped with Visually Optically Aligned Left (VOL) or Visually Optically Aligned Right (VOR) headlamps. These are molded in small letters on the headlamp outer lens as: VOL and SAE or VOR and SAE.

3. **NOTE:** Before starting headlamp adjustment, entry conditions must be met.

- Vehicle must be on level ground.
- Tires must be correctly inflated.
- Vehicle must be normally loaded (the vehicles normal weight of driver, passengers and cargo)
- Headlamps must be clean.
- Headlamps must operate correctly.
- Headlamps switch in the HEADLAMPS position.
- The LH steering column multifunction switch in the LOW BEAMS position. Air suspension switch must be on (if equipped).

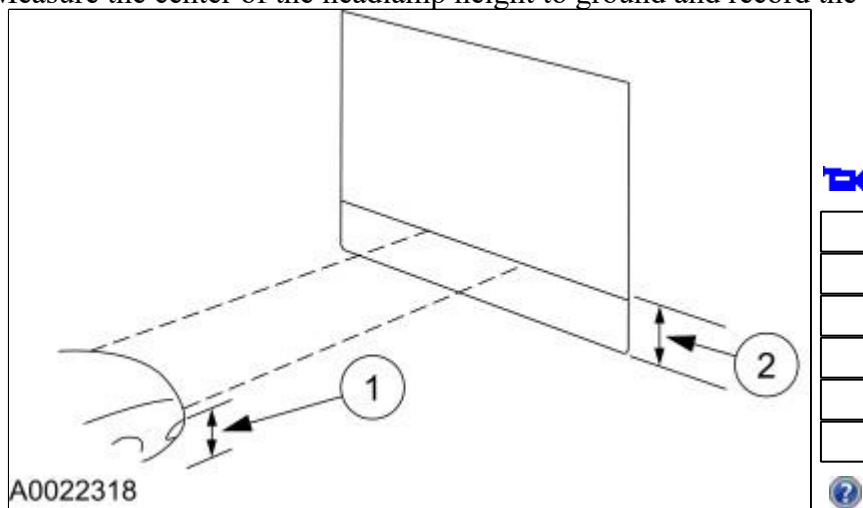
4. **NOTE:** The vertical wall or screen must be large enough to see a majority of the beam pattern.

Park the vehicle on a level surface approximately 7.6 m (25 ft) from the vertical wall or screen directly in front of it.



5. **NOTE:** The optical center of the low beam optical is normally marked on the lens (circle, crosshair or other mark) or is the center of the low beam reflector, optical shield or the low beam projector inner lens.

Measure the center of the headlamp height to ground and record the measurement.



6. **NOTE:** Use a 2.4 m (8 ft) section of masking tape for the horizontal reference line.

- For vehicles with headlamp optical center heights (1) below 95 cm (37.5 inches), place the horizontal reference line (2) equal to the headlamp optical center height.
- For vehicles with headlamp optical center heights (1) between 95 cm - 105 cm (37.5 - 41.5 inches), place the horizontal reference line (2) at the headlamp optical center height minus 1.3 cm (0.5 inch).

For vehicles with headlamp optical center heights (1) above 105 cm (41.5 inches), place the horizontal reference line (2) at the headlamp optical center height minus 2.5 cm (1.0 inch).

7. **NOTE:** Carry out this procedure in a dark environment to effectively see the headlamp beam pattern.

Turn the low beam headlamps on to illuminate the wall or screen and open the hood.

8. **NOTE:** The cut off of the beam pattern is the horizontal line of the beam pattern where there is **MAXIMUM** change between light and dark.

On the wall or screen, locate the cut off of the beam pattern.

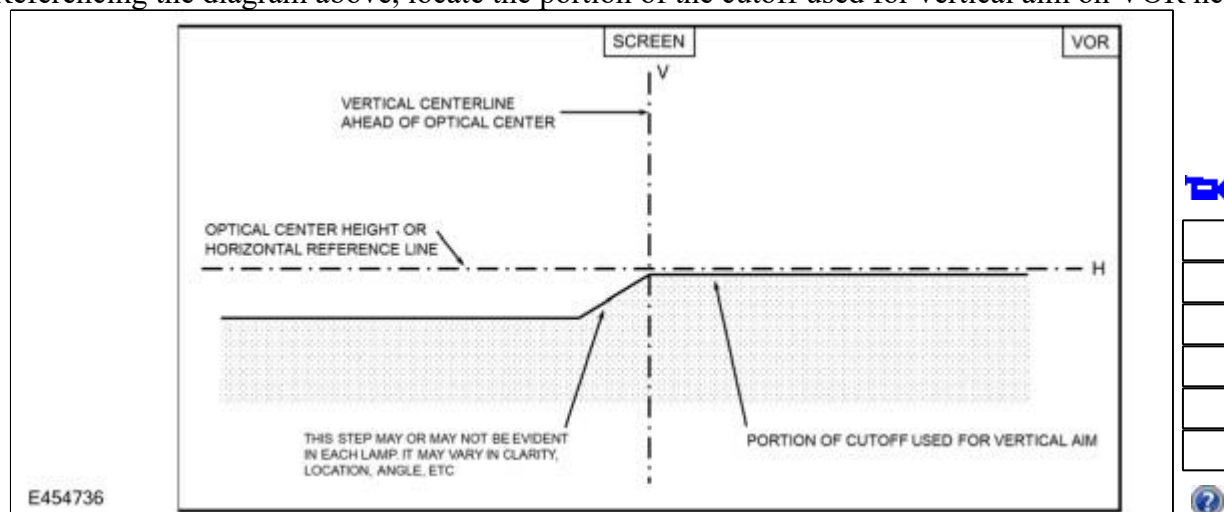
## 2 VOR-type headlamps

**NOTE:** Procedure applies to headlamps with VOR molded on lens.

**NOTE:** When aligning one headlamp, make sure the other headlamp is covered.

9. **NOTE:** The cutoff is the horizontal portion of the beam where the **MAXIMUM** change between light and dark can be found.

Referencing the diagram above, locate the portion of the cutoff used for vertical aim on VOR headlamps.



10. Adjust the headlamp as necessary using the headlamp adjusting screw to align this portion of the cut to the horizontal reference line as shown in the diagram.

11. Repeat the previous step for the remaining headlamp.

12. When both sides are complete, make sure that both beams appear parallel to each other. **VOL-type headlamps**

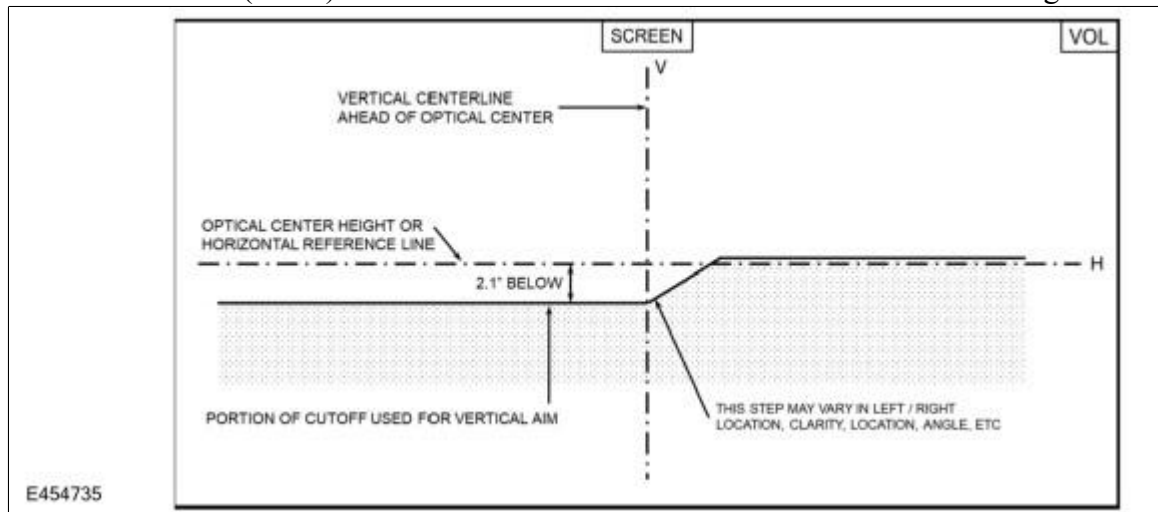
**NOTE:** Procedure applies to both left and right headlamps with VOL molded on lens.

**NOTE:** When aligning one headlamp, make sure the other headlamp is covered.

13. **NOTE:** The cutoff is the horizontal portion of the beam where the MAXIMUM change between light and dark can be found.

Referencing the diagram above, locate the portion of the cutoff used for vertical aim on VOL headlamps.

14. Adjust the headlamp as necessary using the headlamp adjusting screw to align this section so that it is positioned at 5 CM (2.1 in) below the horizontal reference line as shown in the diagram.



15. Repeat the previous step for the remaining headlamp.
16. When both sides are complete, make sure that both beams appear parallel to each other.

© Copyright 2025, Ford Motor Company.