



# Modern Automotive Technology Chapter 68

## Suspension System Diagnosis and Repairs



*North Montco  
Technical Career Center*



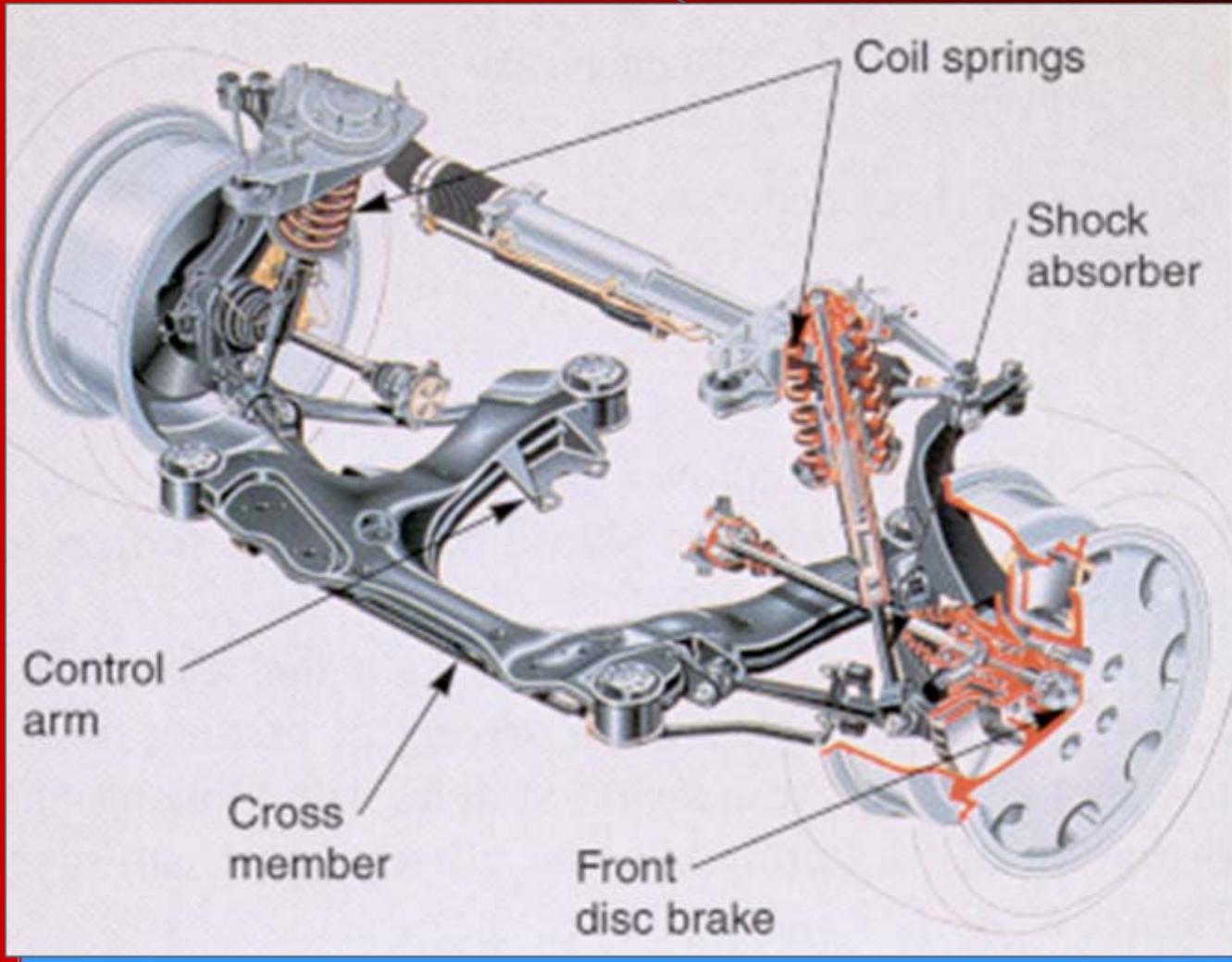
# Learning Objectives

- Diagnosis suspension system problems
- Replace ball joints and shocks
- Service a strut assemble
- Replace bushings
- Describe the operation of an electrically controlled suspension system
- Discuss safety procedures when working on a suspension systems



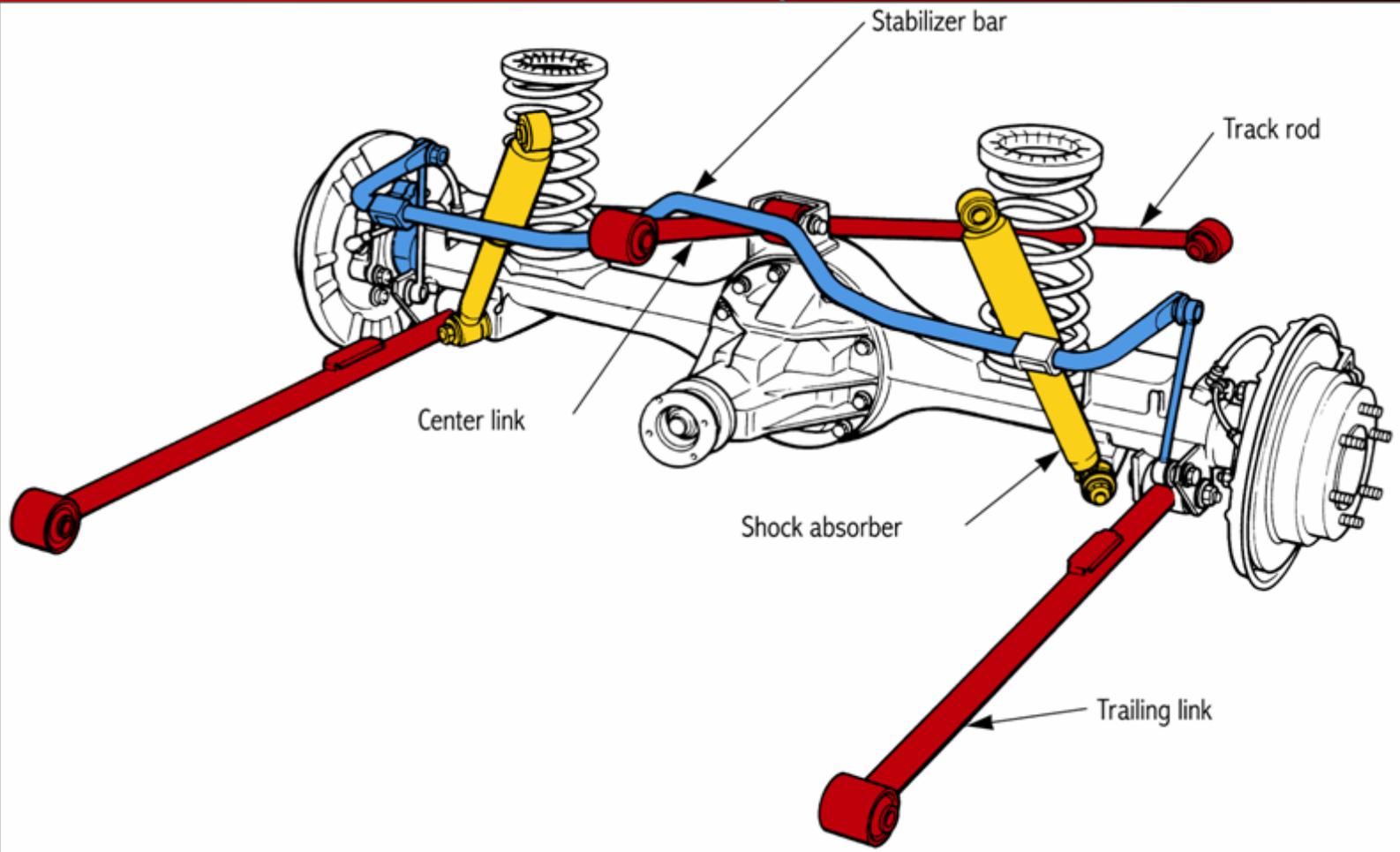


# Front Suspension





# Rear Suspension

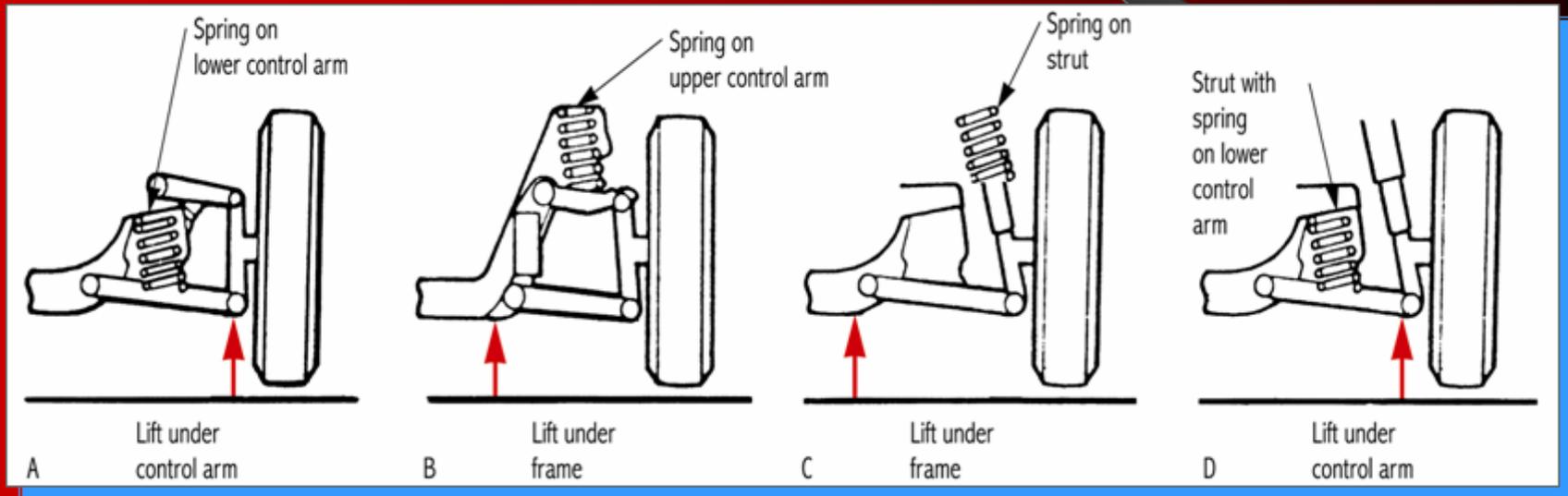




# Chapter 68

1. CURB HEIGHT is the distance from a point on the vehicle to the ground.
2. FRONT END SHIMMY is described as a side-to-side vibration.

# Measuring Ball Joint Play



Lift points for different suspension systems

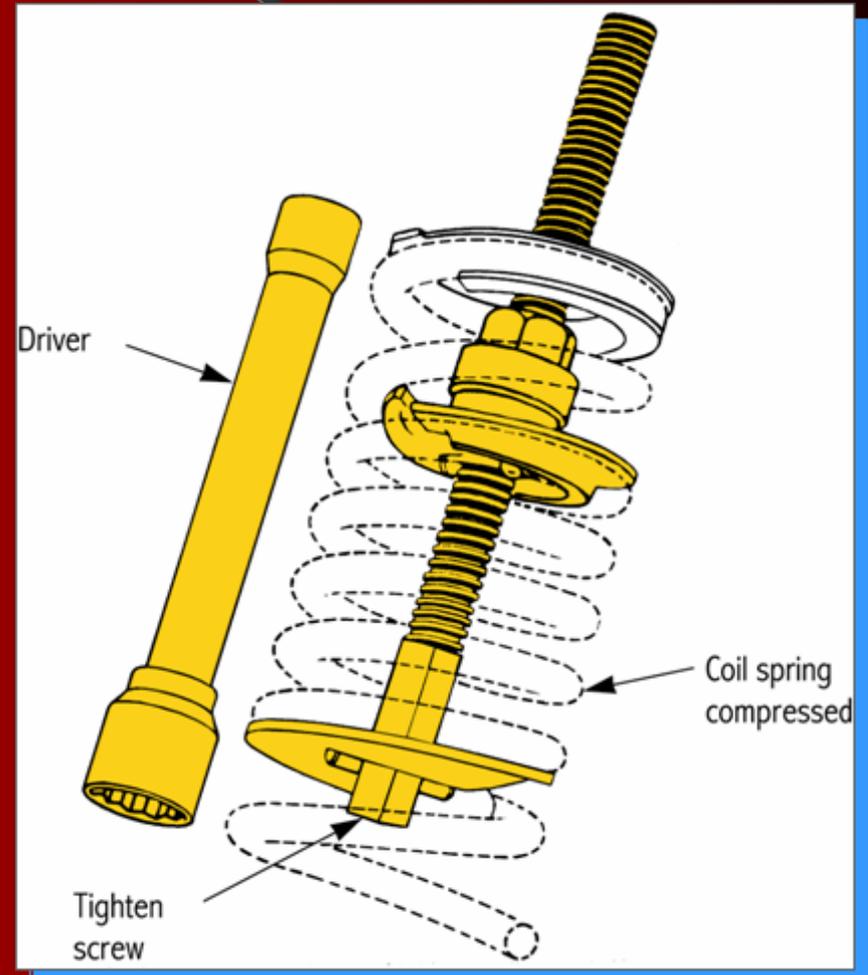


# Chapter 68

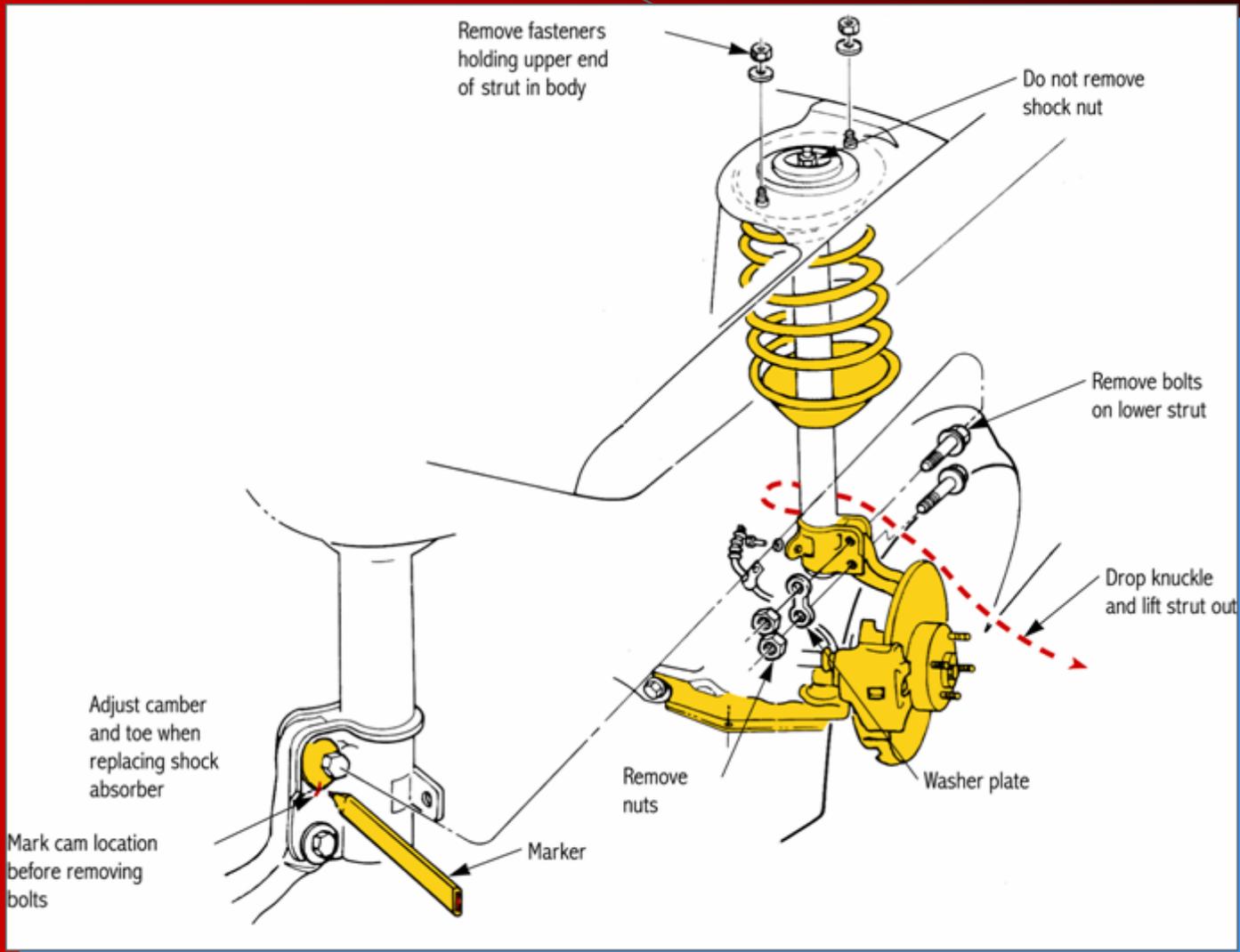
3. **SPRING FATIGUE** lowers vehicle height by allowing the body to settle toward the axles.
4. A **STRUT SPRING COMPRESSOR** is used to remove the coil spring from a MacPherson strut.

# Coil Spring Compressor

Squeezes the coils  
closer together.  
Reduces the length of  
the spring



# Strut Removal

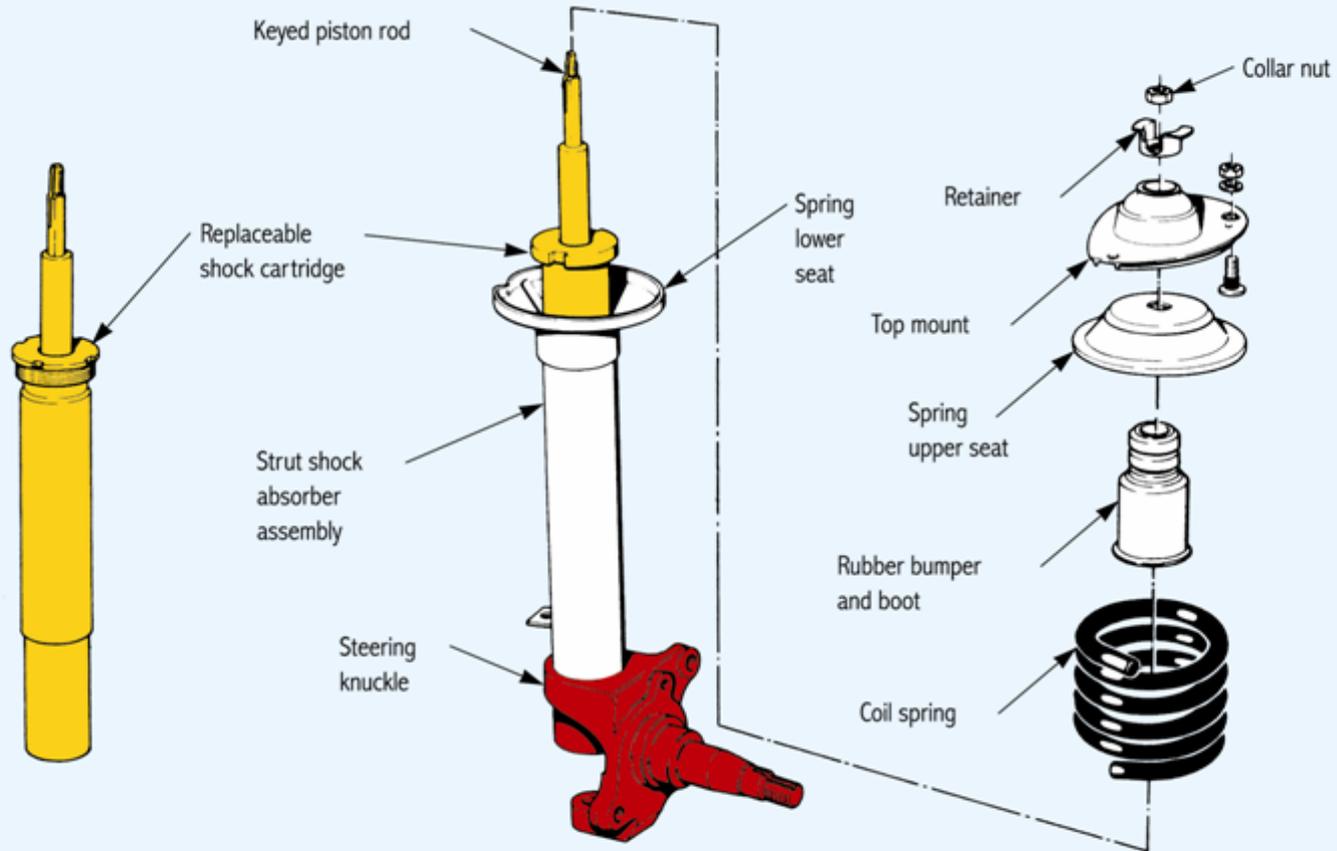




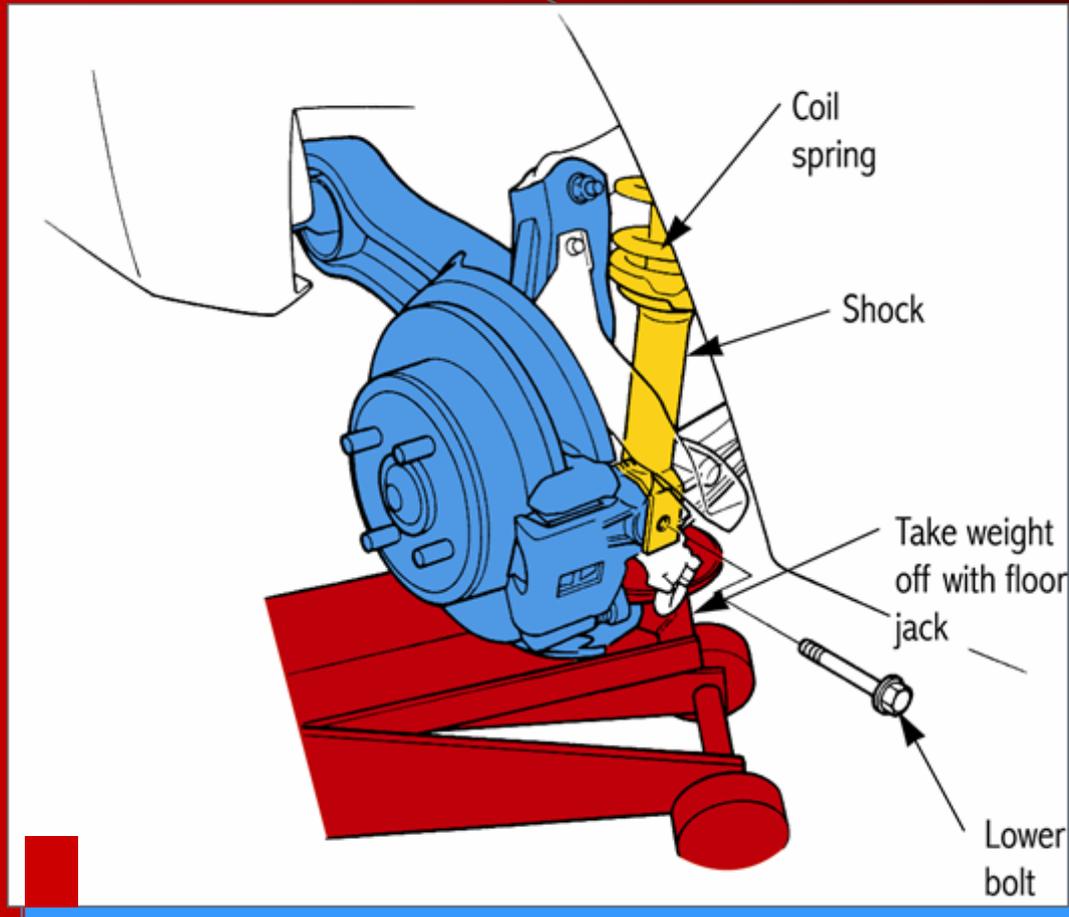
# Chapter 68

5. A **SHOCK CARTRIDGE** is a removable shock absorber unit.
6. **CURB WEIGHT** is the total weight of the vehicle with a full tank of fuel and no passengers or luggage.

# Replacing a Strut Cartridge



# Replacing the Shocks



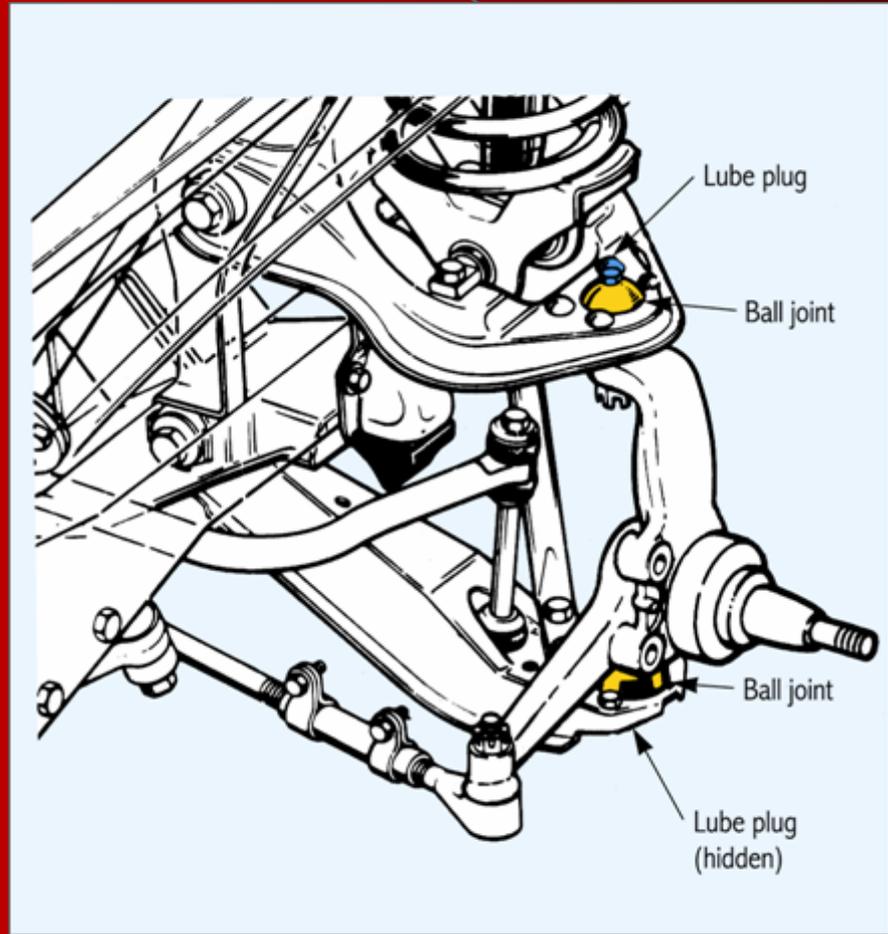
Support the control arm to prevent the spring from forcing parts down violently



# Chapter 68

7. A GREASE GUN is used to inject chassis grease into the ball joint fittings.
8. A FORK TOOL ( also called a “Pickle Fork”) is used to remove the ball joint from the steering knuckle.

# Ball Joint Lubrication



Replace lube plugs with grease fittings



# Chapter 68

9. To perform a SHOCK BOUNCE TEST, push up and down on each corner of the car body.

10. Always install a NEW COTTER PIN when a ball joint nut is removed.

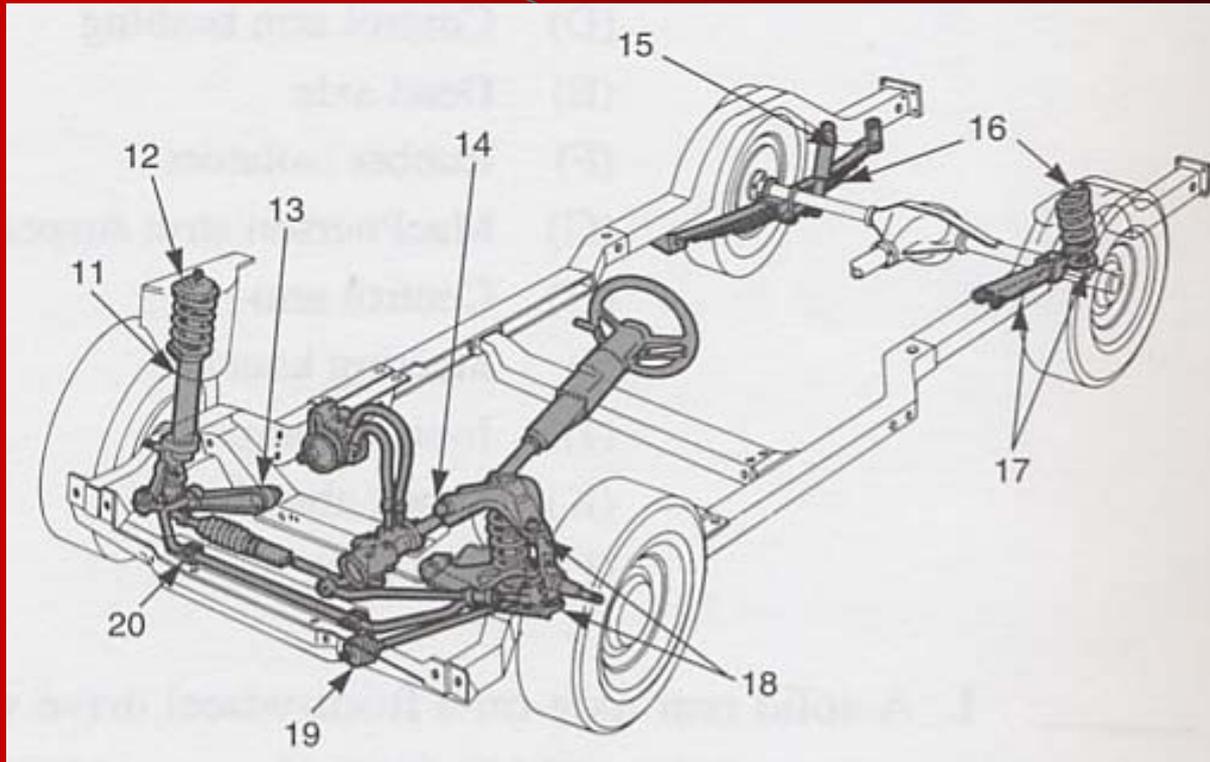
**Note: Under NO circumstance:**

**Never, ever, reuse a COTTER PIN!**

# Checking Shock Absorber Condition

- Perform a visual inspection for damage, rubber bushing wear or oil leakage
- Perform a shock absorber bounce test
  - push down on one corner of the vehicle
  - release the body
  - count the number of times the body rebounds
  - maximum two or three oscillations

# Chapter 68



11. Bad strut shock 12. Worn upper strut mount 13. Bad control arm bushings 14. Worn upper control arm bushings 15. Bad shock absorber 16. Weak springs 17. Worn rear control arm bushings 18. Bad ball joints 19. Strut rod bushings worn 20. Sway arm bushings loose



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