Modern Automotive Technology
Chapter 68
Suspension System Diagnosis and Repairs
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 system
Front Suspension

- Coil springs
- Shock absorber
- Control arm
- Cross member
- Front disc brake
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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
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

- Adjust camber and toe when replacing shock absorber
- Mark cam location before removing bolts
- Remove fasteners holding upper end of strut in body
- Do not remove shock nut
- Remove bolts on lower strut
- Drop knuckle and lift strut out
- Remove nuts
- Washer plate
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
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
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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
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