chapter 49

Rear Suspension and Service

FIGURE 49.1 Solid axles are used on rear-wheel-drive vehicles as well as front-wheel-drive vehicles.

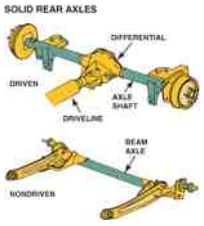

FIGURE 49.2 A solid axle supports the springs, so the axle and suspension components are unsprung weight. When one wheel rides over a bump, the force of impact transfers through the solid axle to the opposite side, leading to unstable handling.

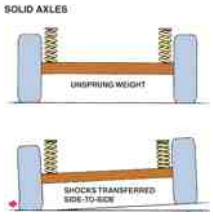

FIGURE 49.3 When the axle housing reacts against the force of axle shaft rotation, the front of the differential tilts upward, creating axle windup.

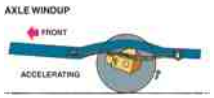

FIGURE 49.4 A typical rear-wheel-drive pickup truck rear suspension equipped with leaf springs. This type of arrangement is called a Hotchkiss drive and the drivetrain forces are controlled by the rear suspension components.

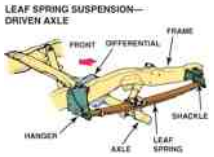

FIGURE 49.5 An exploded view of a beam axle with multileaf springs.

FIGURE 49.6 A trailing arm rear suspension with a solid axle used on a front-wheel-drive vehicle.

FIGURE 49.7 The Camaro and Firebird rear suspension systems use a torque arm to control axle windup. If the rubber torque arm bushings (cushions) are worn, a loud "bang" could be heard and felt when accelerating suddenly.

FIGURE 49.8 A typical beam axle rear suspension, which uses trailing arms and coil springs along with a track rod, also called a Panhard rod, to control side-to-side axle movement.

FIGURE 49.9 This Ford rear suspension uses upper and lower semi-trailing arms to mount the rear axle and a watts linkage to control side-to-side movement.

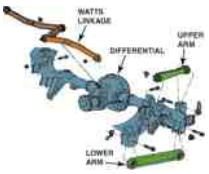

FIGURE 49.10 An independent rear suspension provides a better ride because less weight is unsprung and the suspension is able to react quickly to bumps in the road without affecting the opposite side.

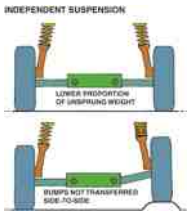

FIGURE 49.11 A typical short/long-arm independent rear suspension.

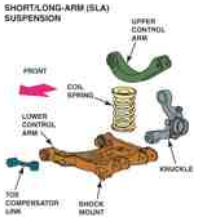

FIGURE 49.12 This independent rear suspension uses a MacPherson strut, two parallel lower transverse control arms, and a trailing arm.

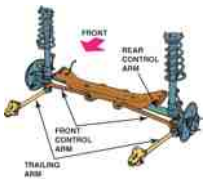

FIGURE 49.13 The toe-control rod provides an extra brace to keep the rear wheels straight ahead during braking and acceleration on this modified-strut-type independent rear suspension.

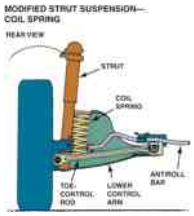

FIGURE 49.14 The upper drawing shows a transverseleaf- spring-type independent rear suspension that uses an "H"-shaped lower control arm. The lower drawing shows a transverse leaf spring suspension that uses two parallel lower links and a trailing arm.

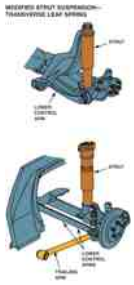

FIGURE 49.15 The crossbeam is placed toward the front of the vehicle rather than the centerline of the rear wheels on a semi-independent-type rear suspension.

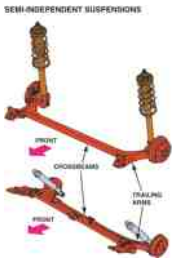

FIGURE 49.16 A semi-independent rear suspension with MacPherson struts.

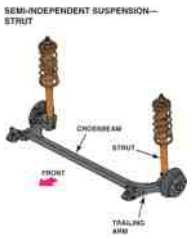

FIGURE 49.17 Check all rubber bushings for excessive cracking.

FIGURE 49.18 Carefully inspect the bump stops for damage during a thorough visual inspection.

FIGURE 49.19 A broken spring was discovered during a routine under-vehicle visual inspection. Notice the witness marks that show that the spring coils have been hitting each other.

FIGURE 49.20 The shock absorber needs to be disconnected before removing the coil spring. Installation is the reverse of removal procedure.

FIGURE 49.21 The center bolt is used to hold the leaves of the leaf spring together. However, the hole for the center bolt also weakens the leaf spring. The crack shown is what a technician discovered when the leaf spring was removed during the diagnosis of a sagging rear suspension.