

Section 4 Topics

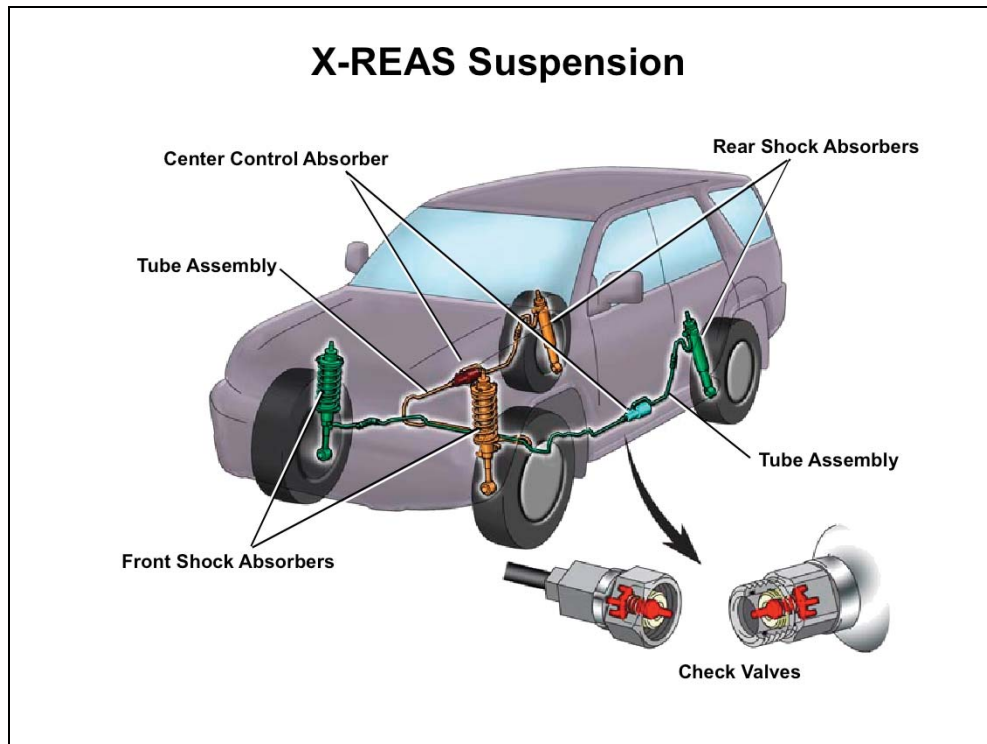
Types of Suspension Systems

- ▶ X-REAS Suspension
- ▶ Rear Air Suspension
- ▶ Adaptive Variable Suspension
- ▶ Active Height Control Suspension
- ▶ Kinetic Dynamic Suspension System



Technician Objectives

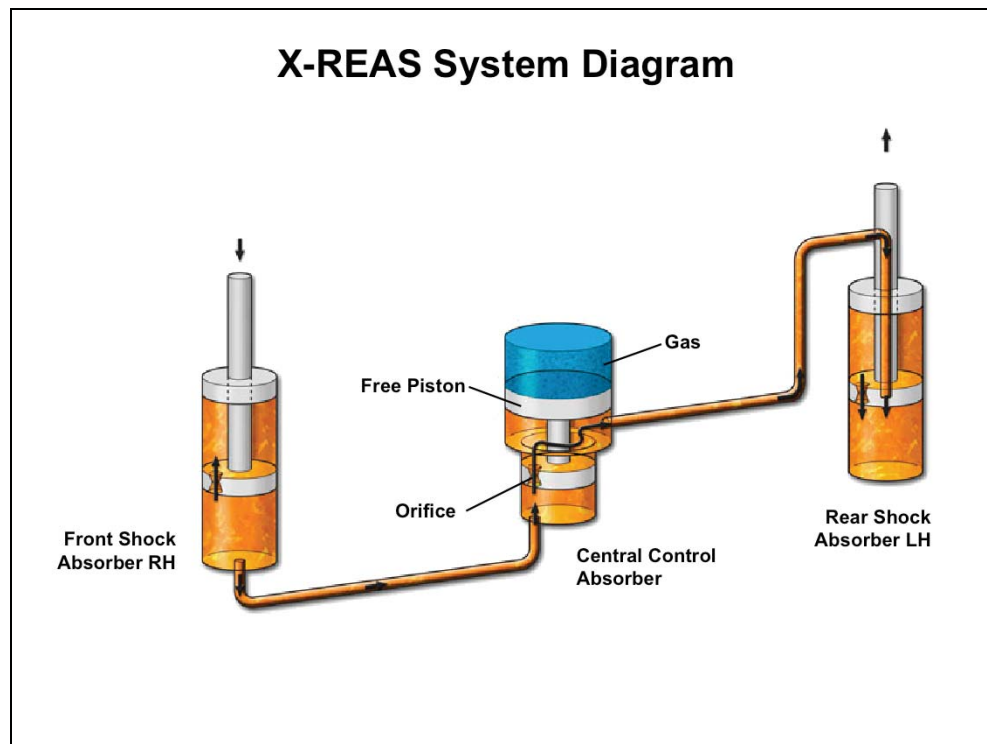
1. Describe X-REAS Suspension.
2. Describe Rear Air Suspension.
3. Describe Adaptive Variable Suspension.
4. Describe Active Height Control Suspension.
5. Describe Kinetic Dynamic Suspension System.



X-REAS Suspension The Cross-Relative Absorber System (X-REAS) uses front and rear shock absorbers connected diagonally by a tube assembly through a center control absorber. As the front and rear shock absorbers compress and extend, hydraulic oil is forced back and forth through the center control absorber. The resulting flow modifies dampening forces to improve vehicle handling.

SERVICE TIP

Oil cannot be changed or bled so the union bolt on the shock absorbers should never be loosened. If any components are damaged or there is a leak, the diagonally linked system must be replaced as a set (both diagonally-linked shocks, center control absorber, and tubes). All components are available individually filled and pressurized. Refer to the Repair Manual for connection of the check valves.



When Shocks Operate in the Same Phase

If the pistons in the two shock absorbers move in opposite directions from body roll or pitch, the compressing shock pushes oil into the central control absorber. The oil passes through an orifice in the center control absorber and flows into the extending shock. This flow modifies the damping forces in the shock absorbers.

When Shocks Operate in Opposite Phases

If the two connected shock absorbers are compressed in the same direction and with the same amount of piston stroke, oil flows into the center control absorber. With equal pressure applied to each each shock absorber, pressure is applied on the free piston in the central control absorber and it does not generate a damping force.

When Shocks Operate in Same Phase at Different Speeds

If the two connected shock absorbers move in the same direction at different speeds, oil flows into the center control absorber, causing the free piston to move in an amount corresponding to the volume of oil flowing in. As oil volume varies, a corresponding flow passes through the orifice to modify the damping force at the connected shock absorbers.