



## TOOL BOX TALKS



### SEAT BELTS: THE THREE COLLISIONS

The National Safety Council's Injury Facts 2009, reports the following information regarding the use of safety belts:

- Reduce fatal injury to front seat occupants by 45% and reduce the risk of moderate to critical injury by 50%.
- Safety belts provide the greatest protection against ejection. In 2008 fatalities, 21% of unrestrained passengers were ejected from the vehicle compared to 1% for those who were restrained with a safety belt.
- Lap/shoulder belts should always be used even in a vehicle equipped with air bags.
- Seat belts saved an estimated 75,000 lives from 2004 to 2008.

To understand the value of safety belt use, it's important to understand some of the dynamics of a crash. Every motor vehicle crash is actually comprised of three collisions.

### THE CAR'S COLLISION

The first collision is known as the car's collision, which causes the car to buckle and bend as it hits something and comes to an abrupt stop. This occurs in approximately one-tenth of a second. The crushing of the front end absorbs some of the force of the crash and cushions the rest of the car. As a result, the passenger compartment comes to a more gradual stop than the front of the car.

### THE HUMAN COLLISION

The second collision occurs as the car's occupants hit some part of the vehicle. At the moment of impact, unbelted occupants are still traveling at the vehicle's original speed. Just after the vehicle comes to a complete stop, these unbelted occupants will slam into the steering wheel, the windshield, or some other part of the vehicle interior. This is the human collision.

Another form of human collision is the person-to-person impact. Unbelted occupants colliding with each other cause many serious injuries. In a crash, occupants tend to move toward the point of impact, not away from it. Unbelted rear-seat passengers who have become high-speed projectiles often strike people in the front seat.

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### **THE INTERNAL COLLISION**

Even after the occupant's body comes to a complete stop, the internal organs are still moving forward. Suddenly, these organs hit other organs or the skeletal system. This third collision is the internal collision and often causes serious or fatal injuries.



### **SO, WHY SAFETY BELTS?**

During a crash, properly fastened safety belts distribute the forces of rapid deceleration over larger and stronger parts of the person's body, such as the chest, hips and shoulders. The safety belt stretches slightly to slow your body down and to increase its stopping distance. The difference between the belted person's stopping distance and the unbelted person's stopping distance is significant. It's often the difference between life and death. (From "Sudden Impact," NHTSA, 1992.)

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