

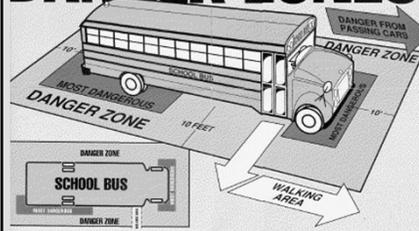
SCHOOL BUS SAFETY

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 August 11, 2016

THE OBJECTIVES

- Explain compartmentalization
- Explain the different requirements for small buses vs large buses
- Describe safety devices and crash forces on a bus
- Explain NHTSA's new movement on making school buses safer

DANGER ZONES



SCHOOL BUSES ARE SAFE

- Safest form of transportation
- 450,000 public school buses transport 23.5 million children
- On average 6 children die in school bus crashes each year
 - Greatest risk is in school bus loading zones

SCHOOL BUSES ARE SAFE

- Less likely to be in a crash
- Experience less crash forces
- Heavier than smaller vehicles
- Distribute crash forces differently
- Provide occupant protection:
 - Compartmentalization
 - Safety Belts required on small buses
 - LATCH required in two seating positions on buses under 10,000 pounds

SAFETY DEVICES AND CRASH FORCES

What safety features are built into the bus?
 How does a bus crash?

SAFETY DEVICES AND CRASH FORCES

- Special Crash Protections
- Better Brakes
- Special Mirror
- Swing out arm
- Emergency Exits
- Rollover Protection
- Fuel System Protection



HOW DOES A SCHOOL BUS CRASH?

- Thomas Freightliner FS bus crash

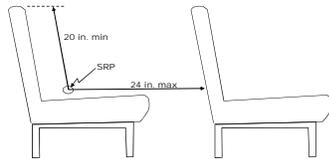
COMPARTMENTALIZATION

What is it all about?
When does it work and when it does not work in a crash?

WHAT IS COMPARTMENTALIZATION?

Compartmentalization is a passive occupant protection system using the concept of eggs in a carton.

- Seats are closely spaced
- Seat backs are:
 - High
 - Flexible
 - Energy absorbing



COMPARTMENTALIZATION

When does it work?

- Frontal crash
- Rear end collision
- Occupants seated correctly

When does it not work?

- Rollover
- Side lateral
- Children hanging in aisles
- Standing on seats

COMPARTMENTALIZATION IN ACTION



REQUIREMENTS SMALL BUS VS LARGE BUS

Why do they have different requirements?
Small bus requirements
Large bus requirements
Head Start Performance Standards

SCHOOL BUSES AND SEAT BELTS?

- School buses under 10,000 lbs. are required to have seat belts installed.
- School buses over 10,000 lbs. may have seat belts installed if reinforced school bus seats are present.
- 10 to 15 passenger vans present greater hazards to occupants due to increased risk of rollovers.
- When seat belts are present on a bus, there are NO exemptions from the child restraint law or seat belt law.

BUS REQUIREMENTS

- | | |
|--|---|
| <p>FMVSS 208</p> <ul style="list-style-type: none"> • Seat Belts are required: <ul style="list-style-type: none"> • In all seating positions of small buses • For drivers only on large buses | <p>FMVSS 209</p> <ul style="list-style-type: none"> • If a school bus doesn't come with factory equipped lap belts and now has lap belts, make sure: <ul style="list-style-type: none"> • Lap belts were installed according to manufacturer's instructions • Retrofitted equipment is certified to meet FMVSS 209 |
|--|---|

BUS REQUIREMENTS

FMVSS 210 Reinforced Seat



Lap-belt ready seat (note diagonal support and other supporting structure in seat)

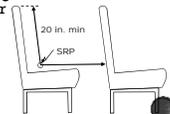
FMVSS 210 Non-Reinforced Seat



Seat that is not "lap belt ready"

BUS REQUIREMENTS

- | | |
|--|---|
| <p>FMVSS 213</p> <ul style="list-style-type: none"> • The child safety restraint system standard <ul style="list-style-type: none"> • Applies to all CSRS including safety harnesses and vests for children weighing up to 65 lbs. • February 27, 2014 expanded up to 80 lbs. • Warning label state entire bus seat behind a seat with a cam wrap must be used only by restrained passengers | <p>FMVSS 222</p> <ul style="list-style-type: none"> • Set the requirements for compartmentalization • Applies only to large buses • Small buses must also have reinforced seating with lap-shoulder belts |
|--|---|



BUS REQUIREMENTS

- FMVSS 225**
- Requires small buses made since September 2002 to have at least two seating positions with LATCH lower anchors



LARGE SCHOOL BUS REQUIREMENTS

- Weigh more than 10,000 lbs.
- Installing child restraints can be challenging
- NHTSA does not require seat belts or LATCH anchors



SMALL SCHOOL BUS REQUIREMENTS

- Does not provide compartmentalization
- Must have lap and shoulder belts in all position, effective October 21, 2011
- Installing child restraints can be challenging

1310.11 CHILD RESTRAINT SYSTEMS.

A) EFFECTIVE JUNE 21, 2004, EACH AGENCY PROVIDING TRANSPORTATION SERVICES MUST ENSURE THAT EACH VEHICLE USED TO TRANSPORT CHILDREN RECEIVING SUCH SERVICES IS EQUIPPED FOR USE OF HEIGHT- AND WEIGHT-APPROPRIATE CHILD SAFETY RESTRAINT SYSTEMS.

Head Start Performance Standard

BUS RESTRAINTS

BASIC TYPES OF CHILD SAFETY RESTRAINT SYSTEMS

- Rear Facing Conventional
- Forward-facing Conventional
- Medical CSRS
- School Bus only CSRS
- Safety Vest
- Safety Harness
- Built-in CSRS

AVAILABLE CHILD SAFETY RESTRAINT SYSTEMS FOR BUSES



NHTSA'S NEW MOVEMENT

How is NHTSA making buses safer for children?
What does that mean?

THE NEW MOVEMENT AND WHAT IT MEANS . . .

- Seat belts save lives
- Every child on every school bus should have a three-point seat belt
- Series of steps designed to move the nation towards seat belts for every child
 - Research projects
 - Looking at resources to overcome financial barriers
 - Letter to governors of the six states that require seat belts



QUESTIONS?

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