

# Untangling Harnesses and Vests

## School Bus and Multi-function School Activity Bus Safety Products • 7/2008, rev.7/2010

This chart reports ONLY products currently manufactured and available in the U.S. It excludes wheelchair-based and lap-shoulder belt types of products.

**This chart presumes familiarity with Background: Regulatory Factors (including glossary) for this vehicle group.** Choosing products for compatibility requires understanding of occupant protection and the specific vehicle types, user issues, regulatory distinctions, and circumstances. **Chart highlights are NOT a substitute for appropriate assessments.** See also Manufacturer’s list contacts.

**Always read and follow manufacturer instructions in context of regulations for vehicle types!** Thresholds and positions reported by this project reflect “most current” positions of these companies as of these posted revision dates. Consult manufacturers directly about case-specific applications or differences with past or future product labels, marketing materials, web sites, printed instructions or previously known practices or forecasts.

**Manufacturers in charts below:**

<b>Add-on products:</b>		<b>Built-in products:</b>	
Besi Manufacturing	SafeGuard (IMMI)	C.E. White	Freedman Seating
E-Z-ON Products	Safe Traffic System	Collins DuraStraint	SafeGuard (IMMI)
Q'Straint			

### Add-on Harnesses / Vests

Manufacturer/ Harness Names	Sizes/ Weights	Securement in School Bus	Comments
<p><b>BESI Manufacturing Inc.</b></p> <p><b>ProTech II</b> <b>ProTech III</b></p> <p><b>Over-the-Shoulder</b></p> <p><b>BESI Vest</b> <b>Universal Securement Vest</b></p>	<p>20- 65 lbs. 25- 90 lbs.</p> <p>“Child” / “Adult” (No weight specifications exist for this)</p> <p>BESI and Universal vests come in Small (to 48 lbs.), Medium (to 105 lbs.), Large (to 164 lbs.)</p>	<p>All Besi products except the Over-the-Shoulder" harness can be used with nonm-reinforced seating.</p> <p>Over-the-Shoulder harness must be used with a lap belt on reinforced seating.</p>	<p>Pro-Tech II and III have five-point harnesses. They differ in minimum and upper weights.</p> <p>BESI vest has expandable inserts from 2 to 6 inches. Universal inserts differ: They are 3 to 6 inches.</p> <p><b>WARNING:</b> “Little People ” belts at this web site are identified as NOT meeting FMVSS 213 for occupant protection purposes.</p>
<p><b>E-Z-ON Products Inc.</b></p> <p><b>Overall distinctions, cautions</b></p> <p>School Bus and Personal Vehicle “shared” products differ on several factors. Compare School and Personal charts.</p> <p>“Vest” and “Harness”</p>	<p><b>Classification differences:</b> To E-Z-ON, “vest” means only “H” shaped products that encircle the torso and are sold in incremental sizes.</p> <p>“Harness” means only “Y”-shaped products having generalized fits.</p>	<p><b>“Vest” and “harness” securement differs.</b> Classification reflects different sizing, weight capacities, and securement allowances or ranges. Charts report these policies per class, then exceptions by model.</p> <p><b>Combining products from different companies:</b> E-Z-ON instructions may reference combining E-Z-ON products with boosters from other manufacturers. In weighing potential combinations, consult both companies to determine the compliance when tested together. These positions may change, based on availability of data or shifts in corporate partnering. For example: E-Z-ON manufactured and supplied an exclusive variation of its KidCam harness to <b>Safety Angel Inc.</b>, which sold the harness in combination with its own Ride Ryte booster after testing the specific pair together to government standards.)</p>	<p><b>Changes in labels and instructions:</b> A number of E-Z-ON labels citing size/weight/age are in transition at the time of this posting. To clarify differing instructions for particular circumstances of use, consult the company for official help.</p> <p><b>Hardware checks:</b> Also consult vehicle manufacturer to identify vehicle anchor weight compatibility or whenever installations include hardware not original to the vehicle – such as use of E-Z-ON’s add-on tether anchor.</p> <p>Company web site offers pictures of installation techniques and anchor hardware. This chart, though, includes product and policy updates newer than the web site.</p> <p><b>Booster combination answers:</b> As of 2008, Safety Angel no longer sells the specific products at left, together or separately. For details, contact <a href="http://www.safetyangel.com">www.safetyangel.com</a> or 800-RIDE-RYTE)</p>

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<p><b>charts, next pages</b></p> <p><b>E-Z-ON Vest Class:</b></p> <p><b>UPRIGHT MODELS:</b></p> <p><b>Models vary by adjustability and available closure types.</b></p> <p><b>Models also are available in differing securement menu options.</b> The charts below note which options exist per model. Compare size and securement columns, plus vehicle type charts that distinguish other differences.</p> <p><b>Standard ordering requirements:</b></p> <p>1) Torso measurement might be requested when ordering in addition to the size choice desired, to help verify fit. Torso size is not labeled. See, also, Comments column on weight interpretations.</p> <p>2) Securement hardware options from that column also will need to be matched to model as well as to vehicle anchor availability or retrofit potential.</p> <p><b>101/102</b> (Non-adjustable; front or back closures available)</p> <p><b>103Z</b> (adjustable; back enclosure only)</p> <p><b>203</b> (adjustable; push button, front-only)</p> <p><b>For E-Z-ON Harnesses, see</b></p>	<p><b>Changes below apply only to "Vest" class:</b></p> <p><b>Streamlined sizing/options:</b> Transitioning in 2008, the company decided to:</p> <p><b>1)</b> Eliminate use of ages, <b>2)</b> Standardize "Small," "Medium" and "Large" previously different by model, and <b>3)</b> Differently classify products as Standard or Custom. Larger previously sold products are now sold only as Custom. (See Comments for definitions.)</p> <p>The company intention now is to have all of the smallest E-Z-ON Vests start at 20 lbs. and to divide "Standard" from "Custom" vests at 100 lbs.</p> <p><b>Standard sizes:</b></p> <p><b>101:</b> S and M increments serving the 20 to 65 lbs. range. <b>102:</b> L serving 65 to 100 lbs.</p> <p><b>103Z:</b> S and M increments for 20-65 lb. range or L (65-100 lbs.)</p> <p><b>203:</b> S and M increments for the 20 to 65 lbs. range, or L (65-100 lbs.)</p>	<p><b>Reinforcement::</b> Vests do NOT require reinforced seating for cam-wrap or floor-mount securement. Reinforcement is <u>always</u> needed for tether or LATCH forms.</p> <p>E-Z-ON's <b>tethered</b> versions come standard with attachment hooks to support the maximum-weight user for that product. (Products before this writing used the same hooks for their labeled higher product weight capacity. See Comments).</p> <p>E-Z-ON sells its own add-on school bus tether anchor. Tether versions require use of lap belt.</p> <p>For "<b>cam wrap</b>" definition of strap around seat back, see <a href="#">School bus glossary</a> along with company materials depictions.</p> <p>E-Z-ON <b>LATCH</b>-like variations:</p> <p><b>1) For buses / positions lacking factory-installed lower LATCH anchors,</b> the vest offers attachments that bolt directly onto the seating reinforcements (no hooks on vest)</p> <p><b>2) For buses / positions with factory-installed lower LATCH anchors,</b> vests can be ordered with standard attachment hooks for up to the maximum weight of the product.</p> <p>Both forms require tethers (not cam wraps) that fasten to E-Z-ON's unique add-on anchor hardware that is bolted to the underside of reinforced bus seating.</p> <p>E-Z-ON "<b>floor mounting</b>" is a unique system for bypassing both seat belt and LATCH installations. Instead, it uses alternative securement equipment bolted directly into the floor, unlike tether or LATCH or belt anchorages on the seating. E-Z-ON says this method is to be used <b>ONLY</b> for users of back-enclosure style vests at risk of unfastening restraint systems during travel. Success with other options should be explored first.</p>	<p><b>Standard</b> products are available directly to the public or distributors in off-the-shelf form.</p> <p>"<b>Custom</b>" products reflect a sales process more than an automatic design difference, but <b>MAY</b> involve physical adaptations other than size alone. The aim is to involve more clarification of variations and understood terms-of-use as part of such sales. Custom currently extends to 168 lbs. Consult the company to define distributor issues.</p> <p><b>Only Vests (not harnesses) offer customized design options.</b> These might address medical/weight suitability, hardware-capacity, non-traditional use or all of these.</p> <p><b>Custom history:</b> E-Z-ON began as an inventor and customizer of occupant protection strategies in areas where few alternative solutions existed, especially for children having disabilities. Its latest Custom change is not a new foray, but a clarification of its long-standing efforts and evolutions.</p> <p><b>Alert on label interpretation of weights:</b> The company emphasizes that all E-Z-ON products are made from the same material and that Vest weight labels serve primarily to help gauging likely user fit. For VEST users over the labeled weight but fitting the device, consult the company to determine suitability.</p> <p><b>Voluntary/standard securement designs:</b> Government standards exempt vests from LATCH and school buses from the requirement to furnish tether anchors. No standard defines or addresses alternative school bus-based anchorage methods/hardware outside the scope of the standards.</p> <p>When using lower LATCH anchors made under government rules, consult the vehicle maker to determine the upper weight limit allowed for their anchors (see General Background).</p>

Manufacturer/ Harness Names	Sizes/ Weights	Securement in School Bus	Comments
<b>next page</b>			
<b>E-Z-ON Harness Class:</b>  <b>1086 CamHarness</b>  <b>KidCam (also called 543 Y)</b>	<p>Recent changes in the Vest class did not affect the Harness class.</p> <p>1086: 30-80 lbs.</p> <p>KidCam: 30-80 lbs.</p>	<p><b>Requirements:</b> All require reinforced seating AND lap belt use.</p> <p><b>Options:</b> Floor-mounts and LATCH options are NOT available for this class. Tether options can be requested but cam-style is most conventional for school bus use as government safety restraint standards expressly address it. (See <a href="#">School Bus Background</a>.)</p>	<p>Y"-shaped harness (top of Y over shoulders, tail of Y as tether) differ from vests in fit, securement, capacity and customization option. (See Vests. Compare, also, to Personal Vehicle chart harness differences.)</p> <p>The difference between the 1086 and KidCam is webbing width. The 1086 is 2" wide and KidCam is 1.5."</p> <p>Notice differences between "Y" harnesses for Personal Vehicle and School Bus classes.</p>
<b>Q'Straint</b>  <b>Q-Vest</b>	<p>Sells only one size, "Small," now labeled for 20-150 lbs.</p>	<p>Cam-like method of securement does <u>not</u> require reinforced seating</p>	<p>Web site offers installation animation and separately sold installation video (referring to former small/large devices/ weights, but the installation technique is the same).</p>
<b>Safe Traffic System Inc.</b>  <b>Ride Safer Travel Vest</b>	<p>Small, 35-60 lbs.</p> <p>Large, 50-80 lbs.</p>	<p>Requires reinforced seating. Cam-wrap method is not available.</p> <p><b>Options for buses with seat belts:</b>  <u>With lap-shoulder belts:</u> Can be used with or without tether.  <u>With lap-only belts:</u> Must use tether.</p> <p>Company recommends using ONLY a Sure-Lok brand wheelchair tie-down track as the tether anchor. (<a href="http://www.sure-lok.com">see www.sure-lok.com</a>)</p>	
<b>SafeGuard (IMMI)</b>  <b>STAR</b> <b>STAR Plus</b> <b>STAR Special Needs</b>	<p>25-65 lbs.</p> <p>25-90 lbs.</p> <p>25-105 lbs.</p>	<p>None requires reinforced seating</p>	<p>Extra chest-positioning strap available to add therapeutic support to STAR version</p> <p>Special Needs version differs by including abductor, recline wedge, torso and head supports for more therapeutic positioning.</p> <p>Connector strap available to connect/ fit three STARs onto benches 39" or wider. (Larger widths of STAR Plus and Special Needs interfere with three-per-bench fits.)</p>

**Built-in products chart, see next page**

(As with add-on products, this chart presumes familiarity with [regulatory background](#) and [School Bus glossary](#))

## Built-in products—School Buses • 7/08

Excludes built-in lap-shoulder belt seating or LATCH anchor products unless part of using the vest/harness sets. For these products the Seating column products would need to be installed into vehicles. The harness columns report the harness variations available for that seating.

Manufacturer	Vehicle seating styles accepting harness	Harness style names/comments	General Comments
<p><b>C.E. White</b></p>	<p><b>Child Restraint Seat</b></p> <p><b>Student Safety Seat</b></p>	<p><b>Integrated Child Restraint Seat (CRS) harness</b>, 20-60 lbs., is normally built into the Child Restraint Seat and can be ordered as an option on the Student Safety Seat.</p> <p>In addition to the CRS, a <b>4-point harness</b> version (straps attached at shoulders and hips) also is available for the Student Safety Seat.</p>	<p>The <b>Cross-Chex</b> harness variation illustrated on the web site is not available.</p>
<p><b>Collins DuraStraint</b></p> <p>(BNS Holding Inc. sells through Collins and Mid-Bus subsidiaries)</p>	<p><b>Child Restraint Seat</b></p>	<p><b>Collins DuraStraint</b>, five-point harness, 20-50 lbs.</p>	<p>Child restraint insert offers padded base to allow child's knees to bend and is removable for laundering.</p>
<p><b>Freedman Seating</b></p> <p>This variation of the models reported in the Commercial and Personal charts was to become available in summer 2008.</p>	<p><b>Integrated Child Seat (I.C.S.)</b></p> <p>Add-on harnesses by other manufacturers are prohibited on this seating.</p>	<p><b>Integrated Child Seat</b> (I.C.S.), 22-51 lbs.</p> <p>(Note different weight capacity than was true for the original products for Commercial / Personal vans.)</p>	<p>See Commercial and Personal vehicle charts for detailed explanations and the company's distinct terminology.</p> <p>Contact both Freedman and bus maker about compatibility of seating to older or new vehicles.</p>
<p><b>SafeGuard (IMMI)</b></p>	<p><b>SafeGuard Seat</b></p>	<p><b>Integrated Child Seat harness</b>, 22-85 lbs. (earlier models allowed only 65 lbs.; consult instructors for model in use.)</p> <p><b>Upper Torso Control Device</b>, 40 lbs. to adult (adds cross-piece as X to lap-shoulder belt). Attaches using LATCH anchors and third upper anchor point (Only use on SafeGuard bus seats)</p>	