PLATINUM RESTRAINTS VS. STANDARD NYLON

Our focus with restraint development is to load the driver earlier in the crash through the use of proper mounting, 6-point restraints and improved webbing, as used in the Platinum Series. Through testing, we have found that there is a delicate balance between force and elongation of the webbing. Traditional standard nylon webbing available in the U.S. has elongation (stretch) of approximately 15% to 17% at 2,500 lbs. Our new Platinum Series webbing, made primarily of polyester, is both stronger (in excess of 20%) and has less elongation (7% to 9% at 2,500 lbs.) than nylon webbing. It also has better resilience to abrasion, moisture and chemical deterioration over time.

With our Platinum Series restraints, these properties help insure that the driver is properly positioned and restrained earlier in the crash equation. The chart below highlights the relationship between the forces applied to the restraint webbing and elongation.

As force is increased, the Platinum Series restraints shows less elongation. For the driver, this means that the restraint webbing is taking a higher load (force) with less travel by the driver (elongation). Leading industry restraint experts have also shown that this reduces Head Injury Criteria (HIC) numbers that are used to evaluate the effectiveness of head and neck restraints in laboratory conditions.

Elongation

This characteristic is important in “loading” the restraint earlier in the crash. The ultimate goal is to restrain the driver earlier by keeping the pelvis back and allowing the upper body to ride the load down in a more controlled fashion. The Platinum Series restraints accomplish this more effectively.

Tensile Strength

The Platinum webbing has 20% more strength than standard Nylon webbing. This combined with redesigned hardware has further improved the strength and retention during a crash. Many racers have reported having improved restraint during hard impacts and were impressed to find that these adjusters do not loosen up during the course of a race. Drag racers have also noted dramatic restraint differences under deceleration especially after parachute deployment.

Wet Strength

Nylon loses approximately 12% of its strength when wet and has a propensity to absorb water. The Platinum Series restraints show better performance under these same conditions.

Chemical and Ultraviolet Resistance

Nylon and Polyester belts seem to show inverse results when tested to chemical resistance. The Platinum Series belts show better performance over time when exposed to sunlight. The relationship between strength over time is improved. Note: SFI Foundation recognizes this relationship of strength over time and requires belt dating as part of its certification compliancy program.

Less Elongation During A Crash Event

7% to 9% for the Platinum Series (Polyester) vs. 13% to 17% with Standard Nylon Belts.All of our testing indicates that earlier loading on the belts positions the driver better for the impact and helps reduce the forces that lead to increased neck tension or whipping.

Stronger Webbing and Adjusters

Webbing is 20% stronger with redesigned adjusters. The combination of redesigned webbing and adjusters have prompted several positive comments from our drivers including high marks with regards to “memory locking.” These belts stay tight and require almost no adjusting during the race. We have also found that our CamLocks are 500 to 800 pounds stronger than our competition.

Better Durability

Provides good resistance to chemicals, moisture and sunlight degradation. Over time, all belts diminish in strength when exposed to the elements. The Platinum Series restraints offer better performance when exposed to racing conditions such as sunlight, moisture (sweat) and abrasion. The performance over time is greatly improved.

SIMPSON RESTRAINT PROPERTIES MATERIAL COMPARISON		
	Standard Belts (Nylon)	**Platinum Series Belts** (Polyester)
Elongation (Static @ 2500 lbs.) (Dynamic @2500 lbs.) (Dynamic @3000 lbs.)	Elongation 15-17% 11% 12.5%	Elongation 7-9% 5% 6%
Tensile Strength	9,000 lbs.	12,000 lbs Platinum Series 10,500 lbs. New Black Platinum
Wet Strength	88%	100%
Acid Resistance	Fair	Good
Alkali Resistance	Excellent	Fair
Elastic Recovery	Superior (32%)	Excellent (51%)
Ultraviolet Degradation (12 months)	Fair	Good
Moisture Regain	4% @ 65% R.H.	0.4% @ 65% R.H.

Water Absorbency	8% @ 95% R.H.	0.5% @ 95% R.H.

SOURCES: The Parachute Manual, Volume II and Simpson Tests at Autoliv North America 20001

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