

OVERVIEW

A rigid structure is of paramount importance in a performance car. High rigidity provides a stable platform for proper suspension geometry and alignment, and it makes possible a tight, rattle-free interior. Additionally, central to the goal of performance is a favorable power-to-weight ratio; a very light car can achieve high performance levels with less horsepower. After an intensive research effort, it was determined that the most efficient way to meet the rigidity and weight targets for the NSX was to build the car exclusively of aluminum.

Using a Cray II supercomputer, the engineers performed millions of Finite Element Modeling and stress analysis calculations. The result of this research and development effort is a chassis that weighs 210 kg (462 lbs) with doors, hood and deck lids installed — about 40% less than a steel chassis — but with the same rigidity and impact protection. The NSX structure is significantly stiffer than every other competitor currently on the market.

EXTRUDED ALUMINUM SIDE SILLS

To attain a structure of high rigidity, complex aluminum extrusions were used for the crucial side sills of the unit body. These extrusions, with their carefully braced internal structure, contribute to the extremely high torsional stiffness of the NSX.

RADIUSED FRONT FRAME RAILS

To maximize occupant protection, the front frame rails of the unit body are designed with large-radius curves where they meet the passenger cabin. This design helps to dissipate energy in a collision, spreading out impact loads and diverting them under the passenger cell.

PERIMETER ROOF RAIL

An innovative perimeter roof rail design helps to maximize the structural rigidity of the roof. The closed-section rail securely ties the four body pillars together, helping to resist torsional forces imposed on the body in hard cornering or on bumpy roads. This improves handling precision and reduces the possibility of squeaks and rattles.

PAINTING

The NSX is painted in a 27-step paint process, including an aircraft-type chromate coating designed for use with aluminum. A new water-borne paint for the base coat was developed to achieve a clearer, more vivid color and a smoother surface finish.