

Styling Design of 2014 Model Year ODYSSEY

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ABSTRACT

The grand concept for the 2014 model year ODYSSEY was set as creating the “Next Multi Seater Saloon,” and the vehicle was developed as a minivan offering new value via an optimal balance between high levels of utility value and automotive value.

The realization of this concept involved the creation of a large and roomy cabin space based on an ultra-low floor platform and the realization of a high level of dynamic performance with a low center of gravity.

Advanced dynamic styling was realized for the exterior design based on the theme “Solid Streamline,” while the three rows of seats in the interior each offer a sense of high quality based on the theme “Modern Suite Room.”

1. Introduction

In 1994 Honda brought the first-generation ODYSSEY to the market, offering new value by enabling more passengers to experience comfortable mobility, and ushered in a minivan boom. Since then, the automotive value incorporated in the ODYSSEY has increased with each model change (Fig. 1).

During the development of the 2014 model year ODYSSEY, the 5th model, the results of a market survey revealed high expectations of the automotive values associated with the ODYSSEY brand: Style, dynamic performance, comfortable mobility, and fuel efficiency.

The survey also showed that in the current luxury minivan market, the popularity of vehicles with a high overall height that offer the large space associated with a box shape and that prioritize the value of user-friendly utility. The survey also considered the circumstances of customers changing over to luxury minivans, and indicated that while in the past the main trend was to change over from sedans to minivans, more recently changeover from one minivan to another has come to represent approximately 70% of the market, strongly demonstrating the importance of utility value.

Based on these survey results, the design team defined new value for the minivan as a sophisticated balancing of the utility value demanded by customers who have grown used to luxury minivans and the automotive value

that is the particular asset of the ODYSSEY. It was also determined that sliding doors are strongly demanded by customers in this class, and it was therefore decided to use them for the first time in an ODYSSEY in the new model.

Seeking to bring together these elements, the design team strove to create the “Next Multi Seater Saloon,” which in addition to a spacious cabin with three rows of seats and dynamic performance with a sense of stability, would offer premium quality through design (Figs. 2 and 3).

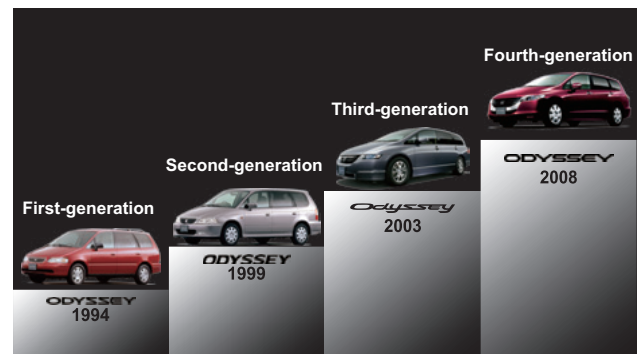


Fig. 1 History of ODYSSEY

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2. Package Layout



Fig. 2 Overview of ODYSSEY

The new value incorporated in the package design was the sophisticated fusion of two antagonistic values: The utility value that represents the strong point of a minivan, and the automotive value that represents the strong point of a sedan (Fig. 4).

This design realized the grand concept of a “Next Multi Seater Saloon” that would bring the experience of comfortable mobility to an even larger number of passengers.

To offer a clear overview of the details of the model change, Fig. 5 compares the 5th model and 2008 model-year ODYSSEY (the 4th model). The details of the package design are discussed below.

2.1. Evolving the Low-floor, Low-center-of-gravity Package

In the luxury minivan market, demand for greater space is increasing year by year. It would have been a simple matter to respond to this demand by increasing the total height of the vehicle, but this would have meant sacrificing the dynamic performance that had been a feature of the ODYSSEY since its first generation.

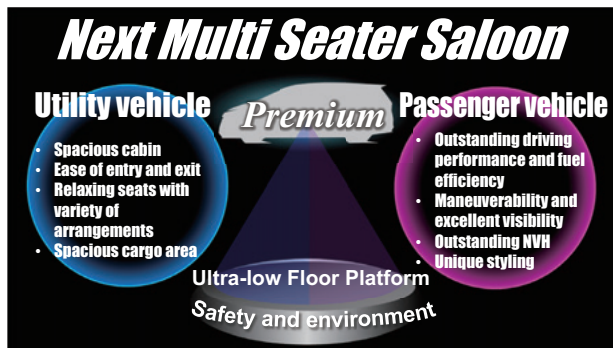


Fig. 3 Grand concept

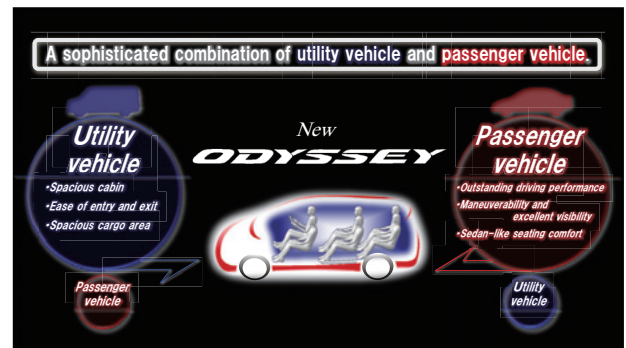


Fig. 4 Package design concept

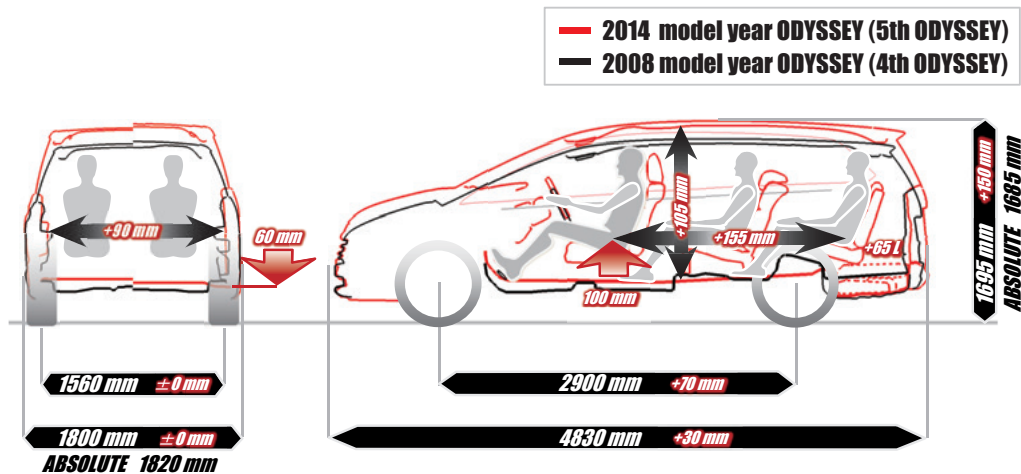


Fig. 5 Packaging

User comments were collected at the outset of the development process through surveys that focused on the family segment of the market. The surveys considered interior cabin height, head room, and maneuverability.

Based on these survey results, it was decided that it would be necessary to reconcile two conflicting targets: To maintain the interior cabin height that satisfied the market, while also taking vehicle motion into consideration, and setting a center-of-gravity height that would help to minimize roll and help prevent children from becoming carsick.

The survey also indicated that women had the impression that vehicles with a high total height were difficult for them to drive. It would therefore be necessary to attempt to realize satisfactory headroom while also controlling the overall vehicle height as much as possible (Fig. 6).

The design team therefore first attempted to evolve the low-floor package. The focus was a flat floor that would not merely be low, but would also give a visual impression of space and offer occupants freedom of movement within the large cabin space. The low floor also contributed to a low center of gravity realizing an exhilarating drive feel and a level of comfort that helps to prevent fatigue even on long-distance drives (Fig. 7).

Based on the concept of this low floor, the interior cabin height was increased by 105 mm against the 4th model to a spacious 1325 mm. The total height of the vehicle was restricted to 1695 mm to offer sedan-like handling. While realizing a total height in the upper medium-sized class, the vehicle's headroom corresponds to the large class, the next-highest class. Based on this, an unprecedentedly low step height of approximately 300 mm was realized for the sliding doors. This is similar to the step height of a low-floor bus, making it easy for children and elderly users to smoothly enter and exit (Fig. 8).

In order to lower the floor, it was necessary to redesign parts including the fuel tank, the exhaust system, and the suspension to make them smaller and thinner, in addition to rethinking their positioning.

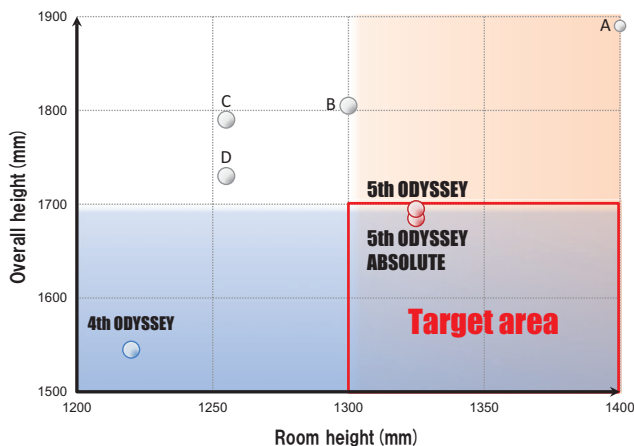


Fig. 6 Cabin height and overall height

2.2. Realizing Interior Space

Seeking to respond more comprehensively to the desire from the market for increased space, designers not only extended space in the direction of height, but also in the directions of length and width. To help ensure sufficient space for all occupants from the first to the third row of seats, the wheel base, which had remained unchanged since the first-generation ODYSSEY, was increased by 70 mm to 2900 mm. This increased the distance between passengers in the first and third rows of seats by 155 mm against the 4th model to 1850 mm.

In this seven-seater configuration, this makes it possible for occupants from the first to third rows of seats to be comfortably seated with space around them even when a 21-inch suitcase for each passenger is packed in the vehicle. This puts the ODYSSEY in the top class of spaciousness compared to other vehicles under the same conditions (Fig. 9). The luggage space has also been increased by 65 L against the 4th model to a high 330 L.

Taking ease of movement into consideration, the total width of the vehicle was maintained at the 1800 mm of the 4th model, and space was made for sunshades at the windows of the second row of seats in order to increase passenger comfort. Despite this, redesign of the shape of the cross-section made it possible to increase the interior width of the vehicle by 90 mm against the 4th model, to a

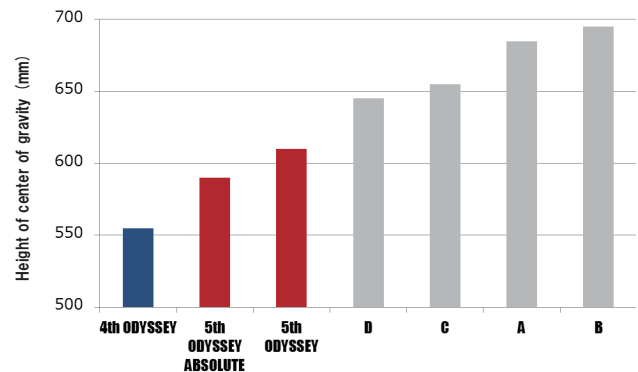


Fig. 7 Height of center of gravity

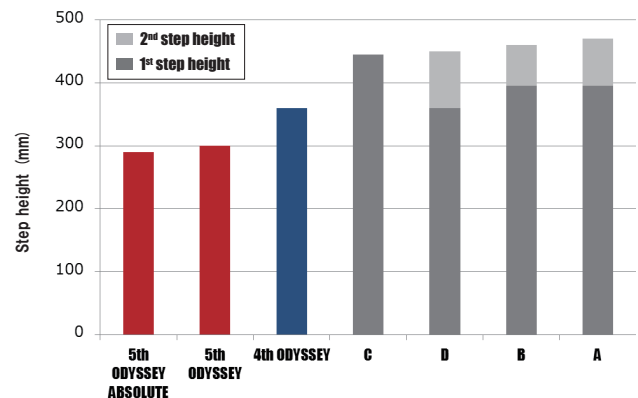


Fig. 8 Ultra-low-step specifications

roomy 1625 mm. At the same time, the distance between passengers in the horizontal direction was increased by 20 mm against the 4th model to 780 mm in the first row of seats, by 40 mm to 780 mm (with two passengers seated) in the second row of seats, and by 140 mm to 660 mm (with two passengers seated) in the third row of seats (Fig. 10).

The transition from the double-wishbone-type rear suspension used in the 4th model to a torsion beam-type controlled intrusion on the cabin space making it possible to realize seating room for three passengers in the third row of seats, an increase of one passenger over previous ODYSSEY models. As a result, the offering of a specification that includes a bench seat in the second row of seats makes this the first-ever eight-seater ODYSSEY.

The design team sought to offer a sense of space in addition to increasing interior dimensions, and realized a visual sense of space with good continuity by making the linings at the sides of the seats the same color as the seats (Fig. 11). For the roof lining, a smooth continuity in the plane connecting the upper surface and the side surface gives a visual sense of breadth (Fig. 12).

2.3. Cradle Seat

To help enable maximum use of the large, flat space realized by the low floor, in addition to the bench seat, premium cradle seats were newly employed in the second row of seats. In addition to the standard forward and

rear movement, this makes it possible to move the seats horizontally, enabling a long slide of 740 mm when the third row of seats is stored away while still avoiding the rear wheel housing. This creates greater legroom offering a limousine-like level of comfort.

When the seatback is laid back in this position, the seat cushions are raised to the optimal angle, helping to prevent the occupant's body from becoming misaligned with the seat. The use of ottomans also disperses pressure on the body, helping to ensure a more relaxed posture.

The angle of the upper section of the seatback can also be independently adjusted, making it possible for the occupant to look forward with the seat laid back, offering a comfortable posture for watching the scenery or having a conversation (Fig. 13). Combined with the stable ride comfort offered by the low level of roll realized by the low floor, this comfortable posture gives a feeling of deluxe seating.

2.4. Visibility

The height of the seats in the first row is related to good visibility and ease of entry and exit.

When the height of the seats is raised, visibility improves, but raising the hips when entering and exiting the vehicle represents a burden. If the seat height is lowered, there is a loss of visibility, and if it is lowered too far, the hips sink deeply during entry to and exit from the vehicle, and this also increases the burden on the vehicle occupant. Given this, the sedan-like seating posture that had been well-received in previous models was maintained, while the

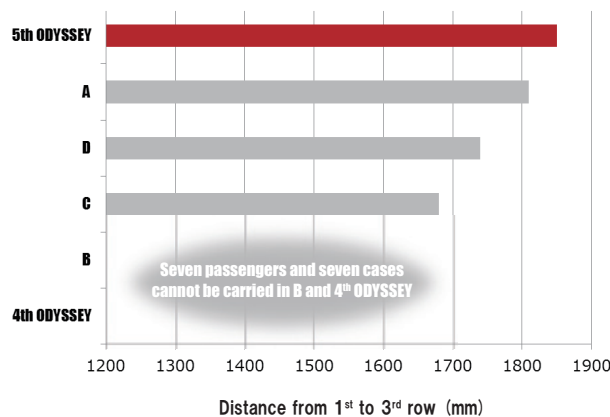


Fig. 9 Distance from 1st to 3rd row of seats when carrying seven passengers and seven suitcases

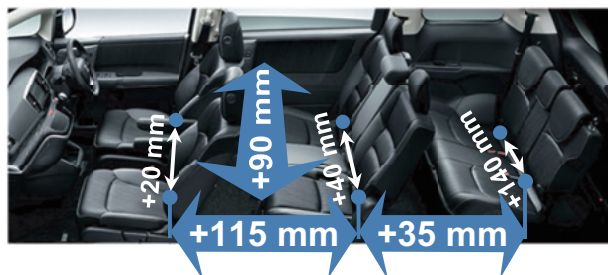


Fig. 10 Spacious cabin



Fig. 11 3rd row seat

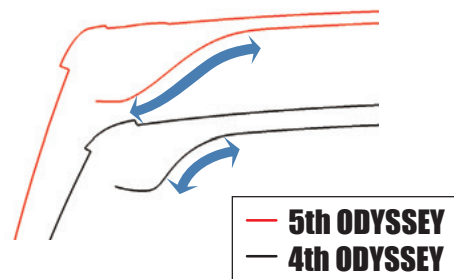


Fig. 12 Roof lining shape

height of the seats was increased by 100 mm against the 4th model to 685 mm, offering good visibility while driving.

This height makes it possible for the passenger to smoothly enter the vehicle without needing to significantly raise or lower their hips (Fig. 14).

With regard to visibility when cornering or changing lanes, in addition to the use of large triangular windows, the use of door mirrors attached to the door skin to minimize blind spots and positioned low in relation to the driver helps to promote improved recognition of pedestrians and other vehicles.

The fine tapering of the rear pillars towards the bottom has also made it possible to realize good rear visibility when parking.

2.5. Sliding Doors

Swing doors have been used for the rear doors since the first generation of the ODYSSEY based on the assumption that because the major share of the market previously

transitioned from passenger vehicles to minivans customers would be familiar with them, and to increase the automotive value of the vehicle. However, user demand for sliding doors is strong in the domestic luxury minivan market, and sliding doors are now employed in the majority of vehicles.

Because of this, and with consideration of the compatibility of the low step, and given that families, who represent the main user segment would want to allow their children to enter and exit the vehicle in narrow parking spaces, sliding doors have been employed for the first time in an ODYSSEY.

However, if the width and height of the door openings were increased, body rigidity would be sacrificed. With regard to the width of the openings, the position of the center pillar was determined based on considerations of side impact and the positions of occupants, thus fixing the position of the anterior end. While the position of the posterior end was being determined based on the position of the rear wheels and the tire size, which are based in turn on the wheel base, the design team worked to increase body rigidity while reducing the size of the cross-sectional shape. Working within a variety of restrictions, lengthening the slide rail while attempting to ensure that there would be no effect on the shape of the rear combination lamps or the shape of the door break line, the design realized an opening width of 750 mm and an opening height of 1230 mm. This is in the top class of door opening dimensions compared to competitors while still maintaining a compact body size (Fig. 15). This not only makes for ease

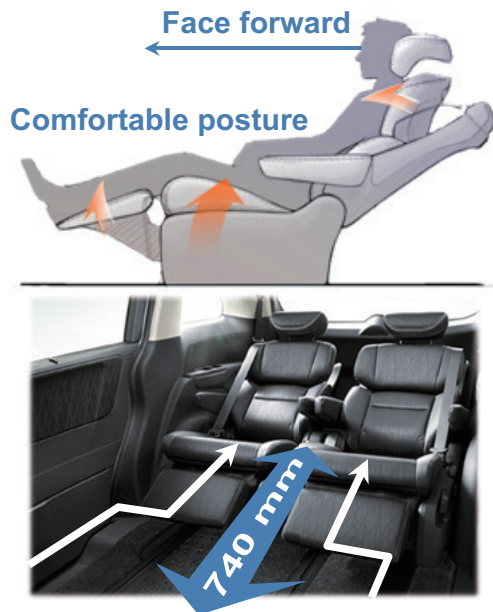


Fig. 13 Premium cradle seats



Fig. 14 Good visibility

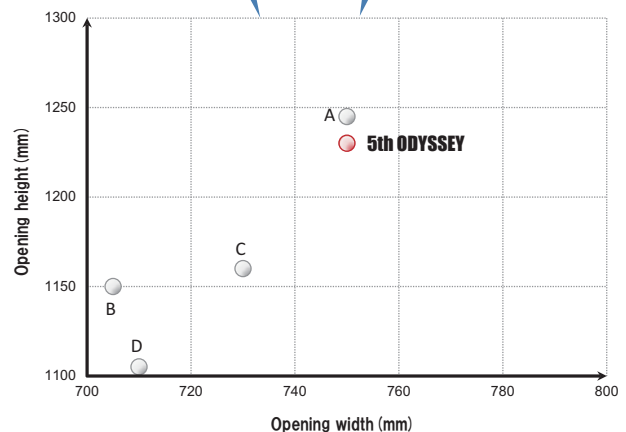
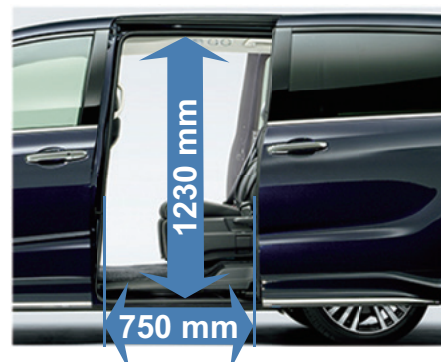


Fig. 15 Sliding doors

of entry and exit, but also allows for storage of large cases when the second row of seats is moved to the rear.

2.6. Convenience of Luggage Space

The height of the lower section of the tailgate opening has been lowered by 70 mm against the 4th model to 525 mm making it easy to load and unload heavy cases. The height of the opening has been increased by 205 mm against the 4th model to 1030 mm. The width of the lower section of the opening, which has a higher frequency of use, has been increased by 280 mm against the 4th model to a maximum of 1160 mm creating an opening that allows easy loading and unloading of large cases.

In addition, the use of a square shape creates an opening that also looks larger (Fig. 16).



Fig. 16 Dimensions of tail gate opening

3. Exterior Design

The exterior design of the vehicle was based on the theme “Solid Streamline.” Design efforts sought to achieve flowing and powerful proportions.

The silhouette employs a relaxed line that connects the slanted nose, created by the compact engine room, to the roof, the total height of which has been reduced. This creates a cabin with a sophisticated flow. At the same time, the protruding front and rear fenders and sculpturally folded midsection offer the appeal of dynamic power and stability (Fig. 17).

As a result of these basic shapes, despite the fact that in this model change the interior has become roomier and the total height has been increased against the 4th model, the exterior design sought to avoid producing a square box shape and aimed towards a design that would present an advanced and dynamic image that carried the ODYSSEY heritage on every level (Fig. 18).

For the front view, the “SOLID WING FACE,” Honda’s “new identity,” has been applied. The employment of a

design that establishes a continuous connection from the center of the front grille to the edges of the headlights offers a broad and technologically advanced image. The design team sought a sense of luxurious quality through the use of a grille that appears to have been carved from a block.

Three-dimensional shaping means that the thick nose, which is short but offers a sense of solid volume, and the lower grille, with its large open area, give a sense of power and unique presence (Fig. 19).

From the side view, a chrome beltline runs continuously from the front to the rear dividing the vehicle into upper and lower sections (upper cabin and lower body).

The aim was to create the visual effect of making the vehicle look lower than its actual total height. The beltline also contributes to creating a side view that gives a nimble and sporty impression (Fig. 20).

For the rear view, the aim was to create a three-dimensional form that would not look boxy and would



Fig. 17 Exterior design concept

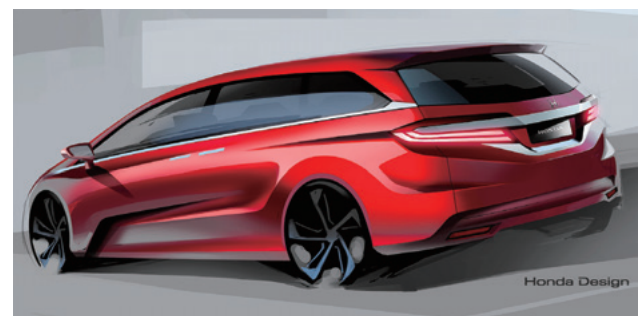


Fig. 18 Exterior rendering

not give a strong impression of corner ends by means of continuous rounding from the side surface to the rear surface. Fine tapering of the rear pillar towards the bottom creates a sharp and sporty design. This also contributes to ensuring a clear field of vision around the lower sections of the rear pillars, the most desirable area of visibility for the driver when reversing.

The rear combination lamps produce a line of light in the shape of wings, offering a broad and technologically advanced image (Fig. 21).

For the design of the roof, wind tunnel tests were employed to optimize the angle and length of the rear end of the roof. In terms of absolute specifications, the three-



Fig. 19 Front view

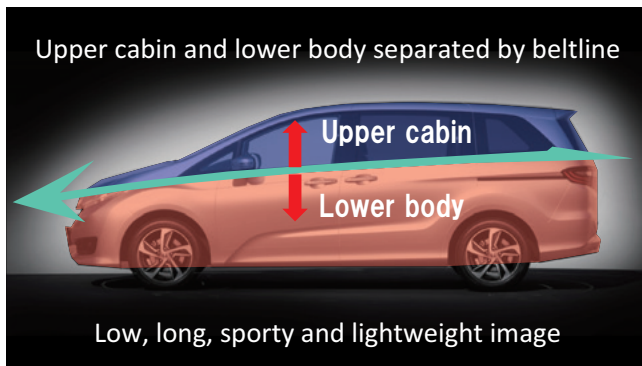


Fig. 20 Side view

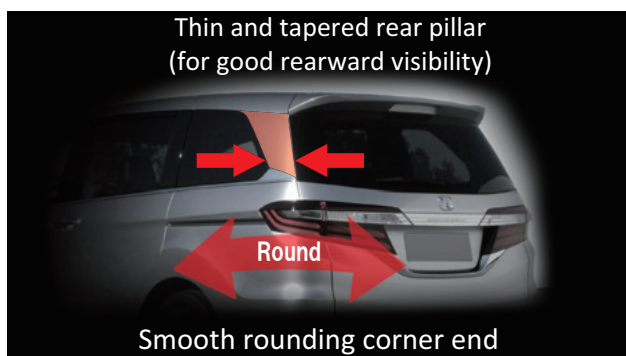


Fig. 21 Rear view

dimensional shaping of the front and rear bumper corners and the protrusion of the garnish of the lower edges of the doors creates the optimum shape for aerodynamic performance. These design features have generated a synergistic effect between sporty and impactful styling and increased aerodynamic performance (Fig. 22).



Fig. 22 Aerodynamic design

4. Interior Design

The concept for interior design was set as "Modern Suite Room," with the image for the space as a whole being a suite in a modern luxury hotel.

A sense of high quality was realized in different ways for the three rows of seats: The first row of seats was imagined as a private desk for the owner, the space in the second row as a sofa for guests, and the third as a guest lounge. This made it possible to realize a high-quality mobile space with a modernity and universal appeal that will satisfy users for the life of the vehicle (Fig. 23).

For the instrument panel, a simple design with a powerful basic horizontal motif was employed in order to express high quality and the class of the vehicle. Positioning audio functions and meters in a central floating soft pad realized a fusion of modernity and luxury.

With regard to coloring, the basic tone is dark mocha, while the central soft pad is ivory with a deep-brown wood-grain panel positioned below it.

Silver decoration has been applied to the lower section of the wood-grain panel in order to provide a frame, offering a sense of modern luxury (Fig. 24).

A sunburst treatment has been applied to the deep wood-grain pattern on the decorative paneling giving a pure sense of the materials through three-dimensional shaping. A touch panel has been used for the heating control panel creating a smooth and refined visual impression.

Soft materials with a moist texture have been used in the central pad, and high-luster silver decoration has been applied to the edge of the outlet in order to add an accent.

A high-visibility large-diameter speedometer has been

employed, and a multi-information display positioned at its center. Forming these meters in three dimensions has realized a fusion of visibility and freshness. High quality and modernity have been expressed down to the finest details (Fig. 25).

Each of the seats has been generously shaped to give an impression of comfortable size. The seat covering is a lustrous suede-feel fabric with a moist texture. The same material has also been used in the door linings and the doors and armrests. This has given all the seats, including those in the second- and third-row, a richly relaxing and high-quality feel (Fig. 26).

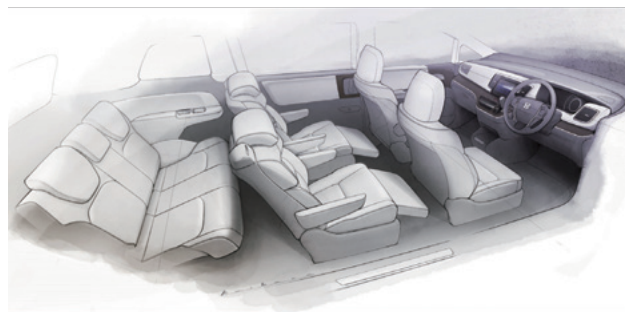


Fig. 26 Interior rendering



Fig. 23 Interior design concept



Fig. 24 Instrument panel rendering



Fig. 25 Styling details

5. Conclusion

The name ODYSSEY means a long and adventurous voyage in ancient Greek. The first generation of the vehicle was true to this meaning in offering a greater number of passengers the new value of sporty mobility, and ushered in a minivan boom in Japan. Honda next turned the concept of the minivan on its head by offering the pleasure of driving at an exhilarating level.

The ODYSSEY is always ahead of its era, and in the latest development, designers reconsidered what a future mobile space should be, and created new value with a view towards the next revolution.

Born as the “Next Multi Seater Saloon” realizing an extremely high-level fusion between automotive value and utility value, the 5th model will fit the lifestyles of users in an even broader range of market segments, and will offer all users long-term pleasure and satisfaction through the experience of comfortable and luxurious hours in motion.

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