

Styling Design of 2020 H'ness CB350

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ABSTRACT

In the Indian motorcycle market, the popularity of 350 cc class mid-sized motorcycles has been increasing since around 2013. A field survey was conducted, and the target users were determined to be young people who are sensitive to changing trends and who adopt global trends. Based on their comments, we decided to use King Riding Position as the keyword. The design was to be based on the concepts of “the rider should look imposing,” “world-class modernity,” and “massive & shaped.” Based on the above, we were able to complete the styling design of the H'ness CB350 in the following manner: it balances the bike firmly supporting the rider confidently straddling it, which is an important value to the Indian customers, and the modernity of the vehicle that evokes global trends.

1. Introduction

The Indian motorcycle market is dominated by small, practical models in the 100 cc to 125 cc range. The reason for their popularity is that they are reasonably priced and match the daily needs of users. Then, from around 2013, mid-sized motorcycles in the 350 cc class have begun to gain popularity. A previously United Kingdom-based production for this particular medium-sized motorcycle model was moved to India in 1955, and the model continues to be produced today without major changes to the manufacturing method or form from that time. The reason for the increase in sales of this model is the enhancement in ease of handling due to the renewal of the engine in 2009, and the updates made to their dealer network that began around 2013. The updated, upscale appearance of the stores, combined with the model's design graphics following latest trends, has also contributed to a significant increase in sales. In towns full of small motorcycles, riders on their larger motorcycles attracted people's attention. Figure 1 shows the sales trend of the mid-sized motorcycle models.

In this market, customers' expectations for Honda's entry into this category have become clear through local dealers. In order to be accepted in India, our designers started a design study of a new model, the H'ness CB350 (Fig. 2).

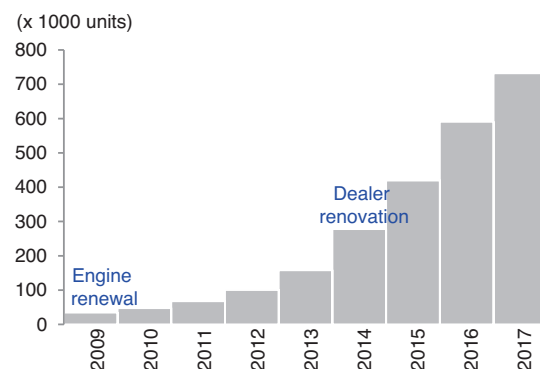


Fig. 1 Changes in sales volume of 350 cc class models



Fig. 2 The H'ness CB350

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2. Survey in India Market

2.1. Target Users

In order to determine the direction of the design, we went to India and visited the users of this class of models and interviewed them (Fig. 3). As a result, it was found that the users of this class of models were divided into two main ways of thinking.

The first group consists of the users who were proud of the existing 350 cc model of the British brand who did not show any interest in other brands because they felt the value of this brand. On the other hand, younger users⁽¹⁾, who are more sensitive to global fashions and changing trends, did not show any particular preference for the British brand. The ratio of the two types of users was about 50:50.

We judged that users with the latter orientation would be willing to accept our products, and designated them as our target users.

2.2. Comments for Existing 350 cc Model by Target Users

The following is a list of comments that we found particularly important.

(1) Purpose

- Practical use as a commuter for daily commuting to work, school, shopping, etc.
- Leisure activities on weekends to enjoy shopping and riding in the suburbs with partner or spouse.
- Touring purposes, from a day trip of about 300 km to a long tour of several days.

(2) What they like about the model

- “King Riding Position” where the rider can ride in an upright, dignified posture (Fig. 4)
- Styling that looks great even when riding at lower speeds
- Large, powerful-looking engine
- Masculine and shapely appearance

- Robust exterior metal parts that have a high quality feel, such as fuel tank and fenders
- Long seat that can seat two comfortably with room to spare

The so-called King Riding Position is the position of the rider. The term King Riding Position refers to the posture of the rider being upright, with their back straight, and chest is out in a confident manner.

2.3. Digging Deeper into User Values

We conducted an interview survey with the target users to identify their values.

They are relatively flexible in their thinking and keep abreast of global trends through the Internet such as SNS. They selected the existing 350 cc model as a motorcycle that can be used for practical purposes as well as for leisure and touring on holidays. Although they were interested in other foreign brand motorcycles sold in the Indian market, many of them are not suitable for practical use, one example being that they are designed for single-seater use in developed countries. Such motorcycles that are only ridden as a hobby on holidays are perceived as models for fun, and do not fit the local values.

Also, King Riding Position was a keyword that stood out in the comments, not only because of the attractiveness of the position itself, but also because it makes the rider look more confident. It seemed as if the respondents had the wish to appeal that they are diligent workers and can ride an expensive motorcycle.

2.4. Market Research Summary

Based on a survey of users of the existing 350 cc class, we decided to target young users who are sensitive to the changing trends and fashions of the world. They wish to ride with an imposing and confident King Riding Position and value practicality. We thought that the motorcycle, which would support such a rider, should be as elegant and imposing as the rider. We decided to work on a design that would balance and embody both Indian user values and global trend values at a high level.



Fig. 3 Scene of user interview



Fig. 4 King Riding Position

3. Styling Design Work

3.1. Styling Design Concept

Based on the comments and key words obtained from the field research, the design concept was defined as “the rider should look imposing” and “world class modernity.”

The first step was to incorporate modern expressions into the styling and detailing, in addition to styling that would suit the King Riding Position.

(1) Interpreting the King Riding Position as a styling direction

- A vehicle body styled with parallel lines that is stable and supports the rider in an upright, confident riding position
- A voluminous appearance that is not overpowered by the rider in King Riding Position
- A split construction seat that is long enough to comfortably accommodate two people
- Air-cooled upright single-cylinder engine with beautifully finished fins
- High-positioned headlight for a strong presence when viewed from front

(2) Structure and detailing that express modernity

- Styling balance with a forward center of gravity, which is the mainstream in modern motorcycles
- Detailing such as surface treatment and integration that makes each part look modern

3.2. Sketching

In order to create a wide range of ideas, sketches were made and discussed by many designers. To verify the balance with the key King Riding Position, we superimposed a photo of the target user in the said riding position on the sketch (Fig. 5).

After reading over the design concept, user comments, and keywords, we narrowed down the sketches to those that met these conditions. The final sketch was one that was simple, yet had a dignified air to it (Fig. 6). In order to confirm the volume and size of the sketch, we proceeded to examine it in a three-dimensional form.

3.3. 3D Study

Based on the sketches we had narrowed down, the overall balance was determined. First, the handles, the seat, and the steps were positioned at the designated points to show the King Riding Position.

The next step was to begin adding the clay, but as we began seeing the overall, three-dimensional image of the vehicle, we felt that the overall proportions were not good (Fig. 7).

The seat was to be made long enough to comfortably seat two people based on our field research, but the clay modeling study revealed that the seat appeared too voluminous and the fuel tank too small (Fig. 8). Since the seat length and riding position were already determined, it was not possible to simply make the fuel tank larger.

Therefore, the angle of the line where the tank meets the seat was adjusted to make the bottom line of the tank appear longer, which also makes the tank appear larger (Fig. 9).

In order to avoid the volume of each part overpowering the appearing of the engine, the size of each part and the mating angles were adjusted. The clay modeling study was thus concluded.



Fig. 5 Photo of target user in King Riding Position overlaid on design sketch



Fig. 6 Final sketch



Fig. 7 First clay model

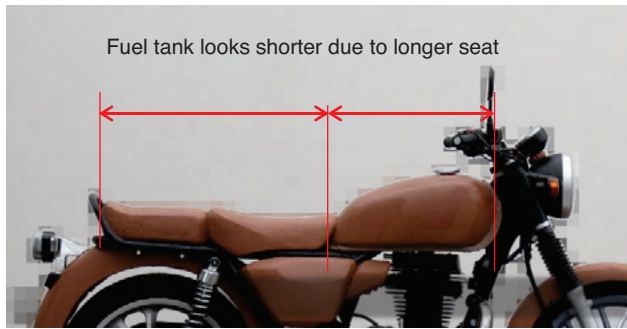


Fig. 8 Impression of double seat and fuel tank

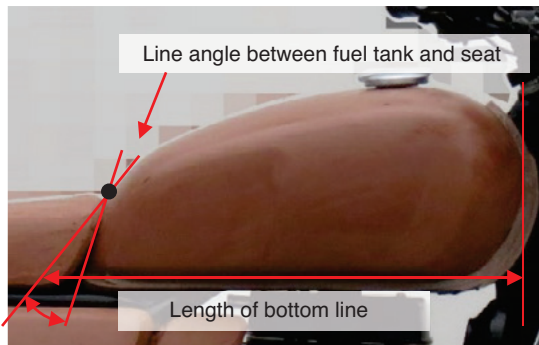


Fig. 9 Appearance adjustment by changing inclination of fuel tank rear end

4. Styling Design Survey in the Local Market

In order to confirm the styling design in the field, we replaced the clay with plastic and created a mock up with paint and other finishes to make it look like an actual motorcycle (Fig. 10). Using this mock up, we conducted survey in the field again to confirm the response of the target users.

4.1. Survey Using Mock Up

We invited users with various attributes from the target user group and held discussions while looking at the mock

ups (Fig. 11).

As a result, it became clear that the styling design presented here would not be accepted by many target users.

The following are the main comments from the users.

- The front view makes it looks like a small motorcycle of about 100 cc
- The engine looks too small
- It looks like it is made of plastic and looks fragile
- It looks like it is trying to copy an existing model
- The headlight (Fig. 12) using the latest technology LED light source looks modern

4.2. User Comment Analysis

The team met in front of the mock up used in the survey and conducted a series of discussions to correctly understand and analyze the parts that were denied by users.

- (1) Front view looks like that of a small motorcycle in the 100 cc class

The possible cause of this is the thinness of the tires. Large 19-inch wheels were applied for a powerful look, but the exposed design of the tires made them look thinner. We thought it was necessary to increase the size of the front tire in the width direction.



Fig. 11 Survey state using mock up model



Fig. 10 Mock up model used in survey



Fig. 12 LED headlight

(2) Engine looks small

The size of the engine itself was sufficient, but its presence was overpowered by the surrounding wide frame and voluminous exterior parts. We thought it was necessary to revise the frame layout drastically to reduce the width of the frame and to increase the freedom of expression of the exterior inflection.

(3) Plasticky feel

It is inevitable that the mock up uses plastic even for the parts that are expected to be made with steel for the production model. However, if the shaping itself gives a plasticky feel, using actual steel would still have the same effect. It was therefore determined that the styling design should express the authentic feel of steel, such as the roundness and warmth of the press work.

(4) It looks like a copy of an existing 350 cc model

It is undeniable that following the same engine type and riding position of the existing 350 cc model would make our model to look similar. However, the main reason was that the styling design itself did not express the unique characteristics of this model. The entire team confirmed the need to go back to the basics and make enhancements.

5. Redesigning

Based on the analysis of user comments, we determined that the points for enhancement were extensive and that the design needed to be redone from the sketches. In addition to the design concepts of “the rider should look imposing” and “world-class modernity,” the words “massive & shaped” were added to create the design features. The target users are those who insist on the King Riding Position but do not adhere to the old models. We thought that the key to success would be to go beyond the boundaries of the Indian market and express originality that would be accepted worldwide.

5.1. Proportions

After the sketch redesigning started, the issue that came up again was the length of the seat. In order to achieve a styling balance with a forward center of gravity to express modernity, separate seats for the front and rear were too long. Although this was a request of the local community, we decided to shorten the overall length without changing the effective space for seating by changing to a one-piece 2-up seat. With this change, the proportions took a more modern direction.

5.2. Fuel Tank

For the fuel tank design, the challenge was how to express the sense of volume that Indian users prefer. The fuel tank is a key element of motorcycle design, and we wanted to give this model originality. We decided to try a design that combines hard, modern elements with a sense of volume and overhang in the width direction, which is a method that would give the impression of volume from the side, not just from the top down. The bottom line was raised slightly at the rear of the tank to emphasize the sense of volume at the front of the tank, which the Indian users prefer, resulting in a highly original tank design with a “Massive & Shaped” feel (Figs. 13 and 14).

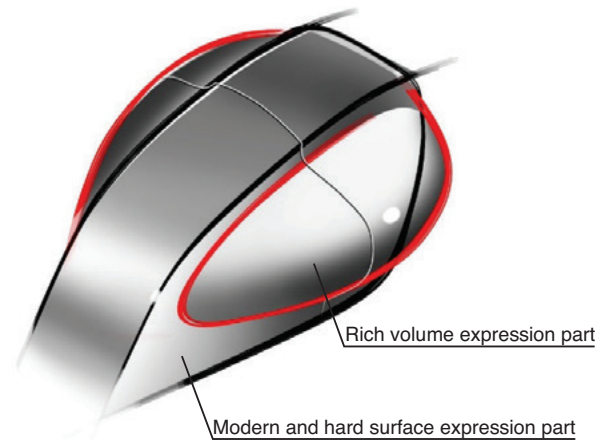


Fig. 13 Fuel tank shape with two different expressions



Fig. 14 Character line of fuel tank

5.3. Horizontal Character Lines Expressing Function

The external shape of the side cover is simple and in line with the frame. A horizontal character line was applied to match the character line of the tank, and the image of the air flow from the air cleaner inside was created. A functional flow connecting the throttle cover, fins of the engine cylinder head, exhaust pipe, and muffler was thus created (Fig. 15). By doing so, we were able to emphasize



Fig. 15 Character line evoking image of gas flow



Fig. 16 Updated final sketch

the expression of a horizontal base with a strong sense of stability.

These resulted in the completion of a new design sketch (Fig. 16). It was an achievement that was made possible by the entire development team working together and going through the process of revising the styling design balance to make an attractive product.

5.4. Three-dimensional Study Using a Clay Model

The shortening of the seat resulted in well-balanced overall proportions. The finished clay model had a well-balanced styling with the rider in the King Riding Position (Fig. 17). The front view, which was commented to look like a small motorcycle from the front, was enhanced by enlarging the tires to give an imposing impression. The stable trapezoidal form supports the rider well, and the parallel alignment of the down tube, pivot pipes, and rear suspensions creates a harmonized balance with the rider's legs and upper body (Fig. 18).

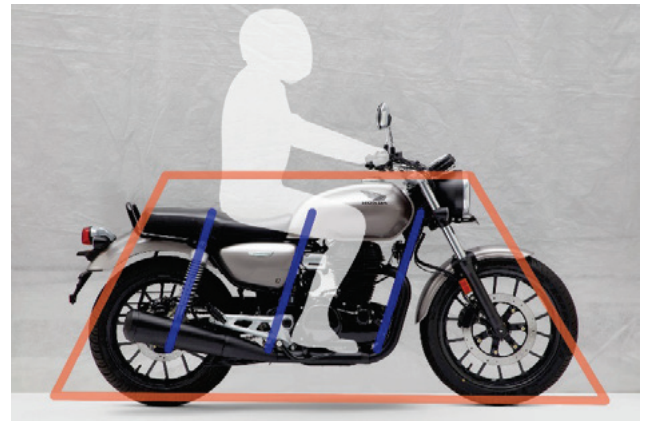


Fig. 18 Stable form and angular harmony between frame and rider



Fig. 17 Finished clay model

6. Styling Design Details

6.1. Engine

For the styling design of the engine, we tried to express the mechanism faithfully and simply. The forward balancer section, one of the most distinctive features of this engine, was emphasized to give the sense of volume in the front and rear. The fins, which are the highlight of the air-cooled engine, were shaped one by one for an overall well-designed look. In addition, the edges of the fins were machined to create a clear contrast of lightness and darkness, which enhances the modern, three-dimensional beauty of the engine. These techniques gave the engine itself a sense of massiveness and made it a symbolic part of this model (Fig. 19).

6.2. Meter Unit

In the styling design of the meter unit, the presence of the unit itself was kept minimal to prioritize an exhilarating riding sensation with a wide field of view for the rider. The display had the indicators arranged in a compact yet easy-to-read manner to reduce the case size. The lens and case were to be made with one-piece molding method to create a simple and fresh form with minimal steps at the mating area, positioning the lens as an important part to express modernity. With the analog speedometer, a gentle convex lens was combined with a flat lens for the digital display, contributing to a fresh appearance by separating the elements with minimalistic expression (Fig. 20).

6.3. Wheels

The wheels chosen for the vehicle have extremely thin spokes and are made of die-cast aluminum to be in line with the latest trends. The individual spokes are made as thinly as possible and in Y-shape, allowing to have lightness in weight and the suppleness to absorb the external force, as

well as strength through the number of spokes. This has resulted in a wheel design that fully supports the body and rider (Fig. 21).

6.4. Seat

The seat has a shapely form, with sufficient width to comfortably support the rider's body weight when riding, and a slim front section in the front to enhance footing when stopped. The slimmer front part also emphasizes the volume of the fuel tank and side covers (Fig. 22).

6.5. Fuel Tank

In order to realize the styling design of the fuel tank which we paid particular attention in the sketching stage, much time was spent to finish it in three dimensions. The character lines at the rear of the tank were also effective in achieving the desired effect, and we were able to express a "massive & shaped" look that is tight while emphasizing volume (Fig. 23).



Fig. 20 Appearance of meter unit



Fig. 19 External design of engine unit



Fig. 21 Exterior design of 14-spoke die-cast aluminum wheel



Fig. 22 Seat and peripheral parts



Fig. 23 Fuel tank

7. Coloring

The coloring is an important element that makes the overall form even more attractive. To make the rider look majestic and assertive, a high-quality, yet modern feel was created. The model comes in two types: the DLX, which is the standard mode, and the variant DLX Pro, which is equipped with a smartphone-linked system. The full color lineup is shown in Fig. 24.

7.1. DLX: Deep and Elegant Dark Colors

A special dark red color (Precious Red Metallic) was developed for this model which, when illuminated by strong light such as sunlight, the metallic shines in the deep areas of the paint, giving a sense of the thickness of the paint layer. In addition, the standard black color has transparent pearl flakes that glitters, emphasizing the depth of the color. Among the dark colors used, the semi-glossy matte green color, which is particularly conscious of global trends, is aimed at users who are more sensitive to trends.

7.2. DLX Pro: Two-tone Paint for a High-end Feel

The two-tone color application was the first specification for the Indian production line, which requires skilled manual work. Two patterns were created for the classic combination of black and silver to attract a wide range of users: one using glossy finish paint, and the other using semi-glossy matte finish paint that is in line with global trends. In addition, a combination of blue and white, the only bright color scheme in the otherwise dark color lineup,



Fig. 24 Full color lineup of the H'ness CB350 (2021 model)

was created to increase the number of choices for users. This color scheme combines a refreshing impression with a sense of luxury.

7.3. Colors, Materials, and Finishes for the Other Areas

By painting the surface of the engine case glossy black and the deeper parts such as the cylinders matte black, a sense of three-dimensionality was emphasized despite the uniformity of the black color. The metallic feel of the steel parts was also accentuated, including the machined edges of the cylinder head air-cooling fins and the chrome-plated engine cover (Fig. 25).

In addition, the front and rear fenders and mufflers were chrome-plated to showcase the beauty and form that are distinctive of pressed steel plates (Fig. 26). The overall finish is black and metallic (with chrome plating, etc.), giving it a dignified and luxurious feel.

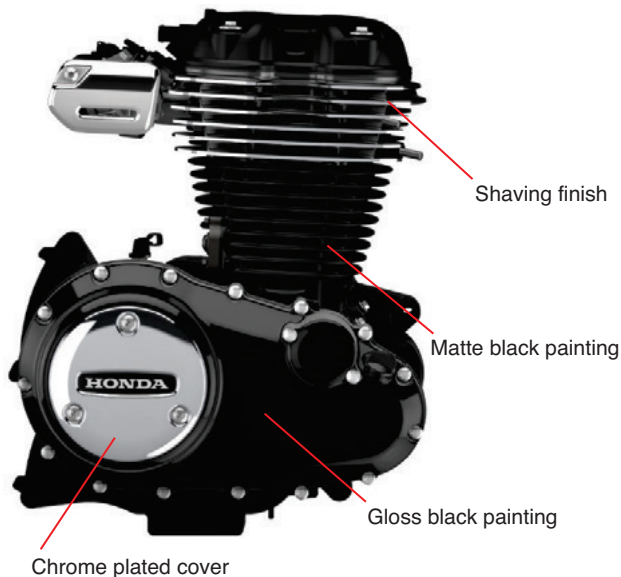


Fig. 25 Harmony of various surface treatments



Fig. 26 Designed shape accentuates raw strength and presence of pressed steel plate

8. Summary

What was consistent throughout the entire styling design process was the keyword King Riding Position, which was elicited from the users. The styling design is the result of understanding the feelings expressed in this phrase, and studying how to make the rider look majestic and elegant, as well as how to make the riders themselves feel confident and happy. It was an important experience for us to hear directly from users in the early stage of development. Through these efforts, we were able to complete the styling design of the H'ness CB350, balancing the value of satisfying Indian users with the modernity of global trends.

We look forward to seeing how the CB350 will develop around the world, and hope to be involved in its further evolution.

Reference

- (1) Yamamoto, K., Wakasa, H., Iguchi, T., Osanai, T., Teshima, S., Kariyasu, T.: Development of 2020 H'ness CB350, Honda R&D Technical Review, Vol. 34, No. 1, p. 10-21

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