A changing market was reducing demand for classic Harley motorcycles, which focused more on style than performance. To counter this problem, Harley had to create a new bike that combined their classic style with the speed of a racing bike. To this end, the design team studied the modifications their customers had made on their own bikes, and modeled their overall design after their racing motorcycles. This way they would get the best of both worlds.

Style played the most important role in the design process. The engineers knew what they wanted to make the bike do, but they were limited by such considerations as the size of the engine, the shape of the exhaust pipes, and the placement of the radiator. For each section, various designs were tested and modified based on whether or not they satisfied the requirements and still contributed to the overall style of the motorcycle.

The frame was the first design challenge. It was meant to be a work of art in itself, and because of this constraint it was difficult to design; engineering-friendly straight lines and regular bends were frowned upon. The problem was eventually solved using the process of hydroforming, which introduced the necessary bends in the piping while minimizing welds that would reduce strength. The team also needed to increase the overall strength of the frame to accommodate and support the more powerful engine.

Once the frame and the engine were in place, the designer used clay to form the body into the desired shape, and this was the model off of which the rest of the parts were based. Clay was used so that any changes required at any point in the conceptualization or design could be accomplished easily and quickly. The radiator was one such part that had to conform to this shape but still be effective; various designs were tested and rejected before one that got the necessary air flow around the front wheel was fabricated. The exhaust had to meet sound regulations, and therefore had to be much larger (at least twelve liters in volume) to accommodate the air flow from the V Twin engine.

At various stages of development and design the new bike was tested to determine what standards it met and what improvements it still required. A year into the project, a crude prototype was created to test the engine, frame, and other basic features. At later stages of development, a more final version of the bike was subjected to rigorous tests to ensure its durability and endurance. These tests included long running stints on the infamous Dusseldorf highway, as well as submitting the bike’s constituent parts to exposure and stress tests. To further authenticate the bike, the team fine-tuned its sound to make it “sound like a Harley.” Lastly, various pieces of the bike were made from or coated in aluminum, both because it is a good design material (light and weather resistant) and because it fit into the plan for what the bike should look like.

When the motorcycle was finished, Harley put on an exhibition to broadcast the arrival of their new product. They staged an entire presentation centered around the new V-ROD bike, which effectively informed and got motorcycle enthusiasts excited about it.