The motorcycle industry is a rapidly expanding field, and to keep up with competitors and trends, Harley Davidson was pressured to combine their trademark style with the speed of their competitor’s motorcycles as well. Previous to the VROD, Harley’s were usually made for comfort and not for speed. Everyone could recognize a Harley by its sound and style. However, the younger generations were enthralled by the speed of lighter bikes, and Harley Davidson was forced to adapt to the change of style.

To compete with the other, faster bikes, Harley Davidson opted to use their racing engines, the VR1000. Previously, their motorcycles would be air cooled, but to produce a faster bike with greater acceleration, a liquid cooled engine would be more ideal. To continue with their tradition of creating bikes that stand out, Harley Davidson wanted its appearance to be sleek but strong with the traditional frame as well. For the heavier engine, the company hoped a curved double rail would bring support. The original ideas that were thought out were later adapted and altered to solve problems that the company would later encounter. From these ideas the company decided that all of these generated ideas would be achievable with the help of their engineers.

Throughout the design process, several prototypes were assembled through collaboration with the engineering and design teams. Before doing this, however, they made numerous sketches with CAD software on their computers for every part of the bike. Once the 3-D sketches seemed plausible, designers produced clay prototypes as well as a working model, enabling the engineers to see the bike at a life size, which exposed further problems.
The crux of the problems Harley Davidson experienced throughout the making of the bike included the size of the fuel tank, the position of the radiator, keeping the trademark Harley Davidson sound, and sizing the frame to the larger engine. The current fuel tank in the prototype could only hold 1 gallon of fuel. This size was unacceptable for practical use, so the company recognized the tank had to be larger, so they produced a larger, almost 4 gallon fuel tank. They solved this problem by using plastic instead of aluminum, allowing more efficient use of space in the bike. Another big problem they encountered in the making of the VROD was positioning the radiator so that it could get the necessary air intake, and would not be restricted by the front wheel. This was solved by using a vortex generator to channel more air into the chamber. The problems regarding sound included the exhaust pipe not meeting the street noise regulations. To solve this problem, they needed the exhaust to hold more air, and they accomplished this by adding a third chamber to the muffler. The traditional frames that Harley Davidson's had did not fit the VR1000 engine, so they slightly altered the frame and bars of the bike by adding a curved double rail.

Throughout the process, tests were done on each piece of the bike as well as the bike as a whole to ensure quality and dependability. The most significant of these tests was the 400 hour continuous running test. In this test, the company ran the engine for 400 hours without stopping to make sure the future owners of the bike would not run into problems with the VROD. Some of the other tests include spraying the bike with water continuously, and also a radiation test to assure the quality of the radios and gauges.

After the testing was complete and all regulations and specifications were met, Harley Davidson indeed produced a high quality bike that combined strength, speed, and style.
Throughout the process and problems, collaboration between the corporate staff, engineers, and designers was crucial, and without the communication the project would have faltered.

After six years of testing, problem solving, and innovating, Harley Davidson produced a bike that met all of their goals and expectations.