

Automatic Iron Scrubber
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Figure 1: Top View Through Acrylic Top of the AIS



Figure 2: The Automatic Iron Scrubber

Summary:

For this project, it is important to understand the problem. In golf, the irons used to play the ball onto the green are fitted with a set of grooves on the club's face. These grooves control the ball's spin. As dirt and debris fill up these grooves, the ball flight will be adversely affected and the ball's flight will change from its intended course. This problem necessitates the need for a device that can clean the club during the round of golf, allowing the golfer a clean club with clean grooves for every shot he or she takes.

Throughout this project, there have been several requirements that have been important to the overall design. The most important of these requirements is that the device works as advertised. The customer will always demand the best results, and that is what the device should give. Also, the device should be relatively small, run off the battery power of the powered golf cart that it is attached to, and should clean the clubs in a quick and efficient manner so as not to impede the play of other golfers in the surrounding areas.

As with most any project, there were several different ideas and concepts that came before the final design that was assembled. The first thought was to create a device that was similar to a Dremel tool in nature. This handheld device would clean the club and would do so in the palm of one's hand. Another design that was considered was a horizontal unit with brushes running vertically. Two motors would run two sets of brushes into which the user would then insert the club that needed to be cleaned. Finally, a model utilizing an on board reservoir of cleaning solution with a hand cranked brush was also considered because of its simplicity and its ease.

The final design that came to be harnessed the best aspects of every other design. This design utilized the on board reservoir of cleaning solvent, first off, to ensure that there would be plenty of solution to clean clubs multiple times. However, this model also utilized a 12V DC motor to power a scrubbing brush. This takes work away from the user, which is always critical when playing a leisure sport such as golf. Finally, a spring clamp mechanism was installed to ensure that the club would be held fast in front of the cleaning brush so that no spots would be missed on the clubs face. In addition, the top of the unit had a channel cut into it so that the unit could accommodate different clubs with different loft angles, which is a key requirement for the overall design.

Finally, a project can not be called complete without analyzing the results. The overall effectiveness of the Automatic Iron Scrubber (AIS) is quite good. The unit is simple in design, while powerful in its approach. The motor does a remarkable job of powering the cleaning brushes on very little voltage. In addition, the spring clamp allows the clubs to be held tight while still allowing for enough movement of the club to adjust for different lofted angles. This project, while difficult and tedious at times, came out better than the expectations set by the designer, which is always an advantageous way for a project to turn out.