Technical Bulletin

How does an Automatic Watch Work?

Automatic or 'self-winding' watches were first introduced in 1770 by Abraham-Louis Perrelet of Switzerland. Through time, they have been refined to the automatic watches of today. In our world of quartz watches, many consumers are not familiar with how these types of watches operate.

These types of watches depend on the motion of the users wrist to obtain energy for operation. The movement of the wrist causes the rotor, a metal oscillating weight attached to a winding mechanism, to spin freely on its staff in the center of the movement. The rotor moves back and forth in a circular motion at the slightest action of the wrist. When the rotor moves in a counterclockwise motion, movement is transmitted through the gears to wind the main spring or 'power reserve' of the watch. The main spring then transmits energy to the gears, driving the hands. This energy is then regulated by the hair spring, which controls timing of the watch, by regulating the speed at which the gears driving the hands rotate.

Once the main spring is fully wound, the watch will operate from 36-48 hours without further movement. However, for optimal performance, the watch should be worn each day to keep the main spring wound. Some users may find that their activity level is not sufficient to keep the watch wound for proper operation. In these instances, the main spring can be wound by turning the crown clockwise 15 to 20 times, providing sufficient energy for one day's use. An automatic watch that has completely stopped can be started in this manner as well.