



### Tachymeter. Beyond the telling of time

The tachymeter, derived from the Greek work takhus, meaning 'swift', measures speed by calculating the distance covered and the time required to cover this distance. The reference distance used is normally the kilometre, and time is measured by the chronograph. The position of the chronograph hand with respect to the graduated bezel indicates the speed in km/h (or as a Mach number). A kilometre covered in 20 seconds, for example, corresponds to a speed of 180 km/h.

The tachymeter can also measure the speed of a supersonic aircraft and express this as a Mach number. The Mach number indicates the relationship between the speed of a moving object and the speed of sound travelling in the same medium. In other words, an aircraft flying at a speed of Mach 1 would be moving at the same speed as sound. On a military plane flying at Mach 2, for example, the hand of the chronograph would indicate one and a half seconds.

However, it should be noted that the speed of sound is not a constant value. It varies according to the density of the medium it is travelling through (air, water solid) and the temperature of the medium. In the air, for example, sound travels at 1170 km/h at a temperature of  $-10^{\circ}\text{C}$  and at 1260 km/h at a temperature of  $+30^{\circ}\text{C}$ .

The tachymeter can also be used to measure speeds in miles per hour and knots. In this case, the reference distances used are the mile and the nautical mile, respectively.



### Telemeter

A telemeter determines the distance of an object from the observer by measuring how long it takes sound to travel that distance. Like a tachymeter, it consists of a stopwatch, or chronograph, and a special scale, usually on the outermost edge of the watch face.