

## Over- and under-cranking

The term over/under-cranking actually comes from the time when analogue film cameras were still manually operated. The operator had to turn a manual crank in order to move the roll of film inside the camera; the faster the crank was turned, the more images per second were shot by the camera, and vice versa. So by manually changing the film speed during recording, a slow-motion or fast motion effect could be achieved when this footage was later shown at the fixed typical film rate of 24 frames per second (fps). Here's



how you can recreate the effect using the [GY-HM700](#) camcorder.

The digital equivalent, while still being called over- and under-cranking, uses a different technology to achieve the same effect, altering the number of images shot per second. In an electronic camera, nothing is turning that can be accelerated or decelerated; instead the number of frames the camera sensor captures per second has to be altered. This is achieved by changing the sensor readout clock to deviate from the standard 24 or 25 fps.

In the [GY-HM700](#), this feature is available in 720p only, at frame rates of 24 or 25 fps. The files that are being recorded are digitally labelled as 24p or 25p files but, in reality, they're being recorded at a different speed. The fastest available speed on the [GY-HM700](#) in 24p mode is 60 fps; the slowest is 10 fps. Despite being recorded at these non-standard speeds, all recorded files are digitally- labelled as having a frame rate of 24p, therefore any editing system will play them at precisely this rate, and the desired effect of slow- or fastmotion will be achieved.

While fast-motion can be achieved by deleting frames from an existing recording, true slow-motion effects can only be generated by recording a higher number of frames and then playing them at a slower speed. Unlike NLEs that rely on slowing down a standard piece of video footage by repeating frames, true slow-motion generated by over-cranking exhibits less motion judder and more image clarity, as it relies on a significantly higher number of real images.



Here's how to achieve this using the [GY-HM700](#) (in 720p only):

- Set the camera for frame rates and resolution of 720p/24 or 720p/25.
- Then, in the recording mode menu, change recording from Normal to Variable Frame and pick the desired frame rate.