



Repeat Length Measurement System
Speed Limits
September 20, 2011

Web material speed is limited by encoder response rate. The maximum encoder pulse rate is 20,000 pulses per second. Maximum web material speed depends on the web movement per encoder revolution and the 20,000 pulse per second response limit. The calculation of maximum web material speed is shown below:

$$\text{Max Speed (M/Min.)} = (\text{meters/revolution}) * 60 * (\text{max pulses/sec}) / (\text{pulses/revolution})$$

$$\text{Max Speed} = \text{meters/revolution} * 60 * 20,000 / 600 = 2000 * \text{meters/revolution}$$

Our experience is that installations are typically .2 - .5 meters per encoder revolution, resulting in speed limits of 400 – 1000 meters per minute.

The registration mark scanner may be a secondary speed limit. Scanner response is typically 100 microseconds. The registration mark must be large enough to be “in-view” for 100 microseconds at the maximum speed for the scanner to make detection. At 1000 meters per minute (16 meters/second), a mark of size approximately 1.6 mm is in view for this time. Most marks are on the order of 3 to 6 mm or safely within the speed limitations of the scanner.