We present the first application of a magneto-seismology technique using asymmetric waveguides. By applying the recently developed Amplitude Ratio Method to chromospheric fibrils, we are able to diagnose the local Alfvén speed, which has previously been nearly impossible to determine given the observational difficulty to directly measure the magnetic field. The solar magneto-seismology (SMS) diagnostics is carried out by finding the boundaries of the dark fibrils using Gaussian fitting, then taking the ratio of the measured maximum amplitudes of each boundary oscillation. This amplitude ratio provides a proxy of the internal magnetic field strength of the waveguide and is exploited using a numerical inversion scheme. Five fibrils are analysed as a proof of concept. Their internal Alfvén speeds are estimated and agree well with previous studies, demonstrating the powerful diagnostic applicability of the SMS to asymmetric MHD waveguides.