

Technical Brief for the MAG 2000

How the MAG 2000 Works

The MAG 2000 utilizes two magnets, the bottom magnet held rigidly in place and an upper magnet held in place by the mutual magnetic field attraction. When acceleration due to shock or vibration is strong enough to create a force greater than the magnetic force, the upper magnet is forced off its "home" position and appears in a new visible position within the device. The MAG 2000 also indicates the angle of impact by the position of the upper magnet. The G-activation level is factory set and available in a wide variety of settings from 1/2 to 25 G's. Selection guides are available upon request that will convert G-levels to MPH correlations.

MAG 2000 Selection

The MAG 2000 is the ideal product to monitor shipments in excess of 100 lbs. There are some specific situations to be aware of when thinking about purchasing a MAG 2000.

First, you must know the modes of transportation that the shipment will encounter. For example, if a shipment is going truck and air only, the primary concern will be vertical impacts such as are created when the truck goes over potholes or speed bumps too fast or if a plane lands hard. If a shipment is going rail at some point, there should be concern for horizontal impacts that occur during railcar couplings.

Second, you must know if the MAG 2000 is to be placed on the contents or the package. It is advisable that the MAG 2000 is always placed on the contents because generally what is important is how much impact the contents received as opposed to what the package received. But there are exceptions, such as the customer wanting to view the MAG 2000 at all times. The placement of the MAG 2000 will affect the selection of the proper sensitivity. The contents should always experience less impact than the package because of the dampening characteristics of the package. Therefore, if the MAG 2000 is to be placed on the contents, you should always prescribe a value equal to or less than the nominal value dictated by the weight of the package unless the customer has a damage specification for the contents which, in that case, should be matched.

Worthy of mention is that two VH MAG 2000 units can be oriented on a single package such as to give three-axis (omni-directional) coverage. For values above 3G, the vertical response of a VH MAG 2000 is 1G less than the horizontal response. For example, a 5G VH MAG 2000 will respond to a 4G vertical impact. With MAG 2000 placement as shown in the figure, any impact, either horizontal or vertical, can be monitored.

