



Acceleration - Roundabout Subject to Change Without Notice

V.A.S.E. Pro Accelerometer

AMA JEWELL – ACCELERATION IN ROUNDABOUT

Introduction

V.A.S.E. Pro use Jewell Instruments AMA accelerometers. The instruments are connected to a Data Acquisition Unit. Acceleration values of a subcompact car and a minivan through a roundabout. Each result will vary by vehicle type, road conditions, vehicle condition, placement of accelerometers, etc.

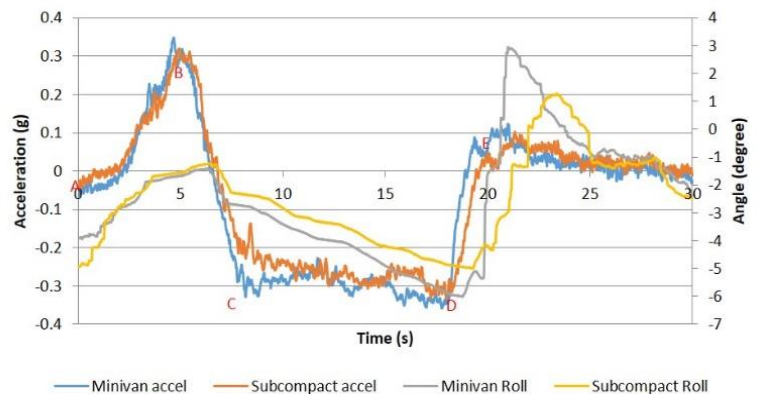
Typical Readout Spec V.A.S.E. Pro Accelerometer

- Continuous Readout
- Save in time stamped continuous files 15 seconds to multiple hours.
- Sample Frequency 300 Hz or other
- Three axis (x, y, z)
- Resolution 0.001g
- Linearity Sample Range -3g to +3g
- Bessel Filtering
- Calibration Curves –
 - Typically form $g = \sum (+/- a_i x^i)$ ($i=0$ to 4)

Vehicle Movement monitoring

As a demonstration for the use of accelerometers and tilt meters in vehicle monitoring applications, V.A.S.E. Pro installed transducers in two different vehicles. The vehicles were driven through a section of road with features that can cause significant vibration to the interior of the vehicle.

Example: Traffic circle – Lateral Acceleration



Here we see starting at point A the vehicles start accelerating to the right into the turn at point B. The vehicle rolls to the left. Point B is the maximum rightward acceleration where the vehicles then accelerate leftwards into the circle from C to D. The vehicles exhibit body roll to the right, which could cause rollover if the acceleration is too high. At point D the vehicles accelerate out of the curve through point E at a much shallower angle than the entrance to the circle, so the rightward acceleration is smaller.

Potential applications:

Designing automotive tires for handling characteristics.
Testing vehicle suspensions and centre of gravity for rollover safety.