

SEN-009 COMBINATION TILT/SHOCK SENSOR

INTRODUCTION

Dynamco has developed this sensor to detect a change in angle of the a vehicle and the vibration impacting upon the vehicle. The sensor has an advantage over conventional shock sensors in that all movement is detected in a change with respect to the earth. Many conventional sensors use a magnet and coil combination which can be prone to false alarms by fluorescent light switching on.

For best results, the SEN-003 should be connected to an alarm system that disables the power or ground signals to the sensor when disarmed. Each time the sensor is powered-up, it will instantly reset the reference angle. By applying a constant power and ground, the SEN-009 will only do this after 15 seconds.

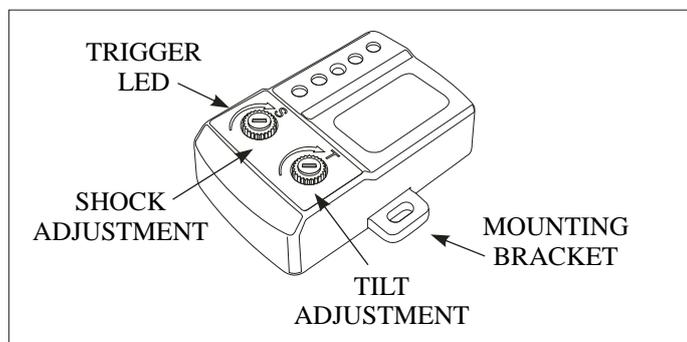
EQUIPMENT DESCRIPTION

Mounting points

The sensor case has two rigid loops which allow the installer to fasten the sensor to the vehicle with either a nylon cable tie or self tapping screws.

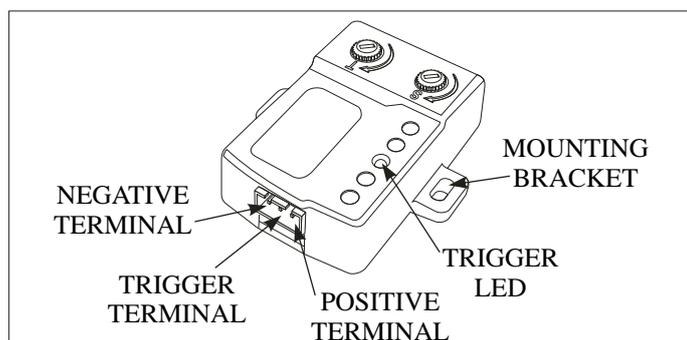
Adjustment dials

At one end of the case are two adjustment dials. The dial marked "T" adjusts the tilt sensitivity, the dial marked "S" adjusts the shock sensitivity. Turning either dial clockwise will independently increase the sensitivity of each detector. Each dial can only 270 degrees, do not attempt to turn the dial past it's minimum or maximum angle.



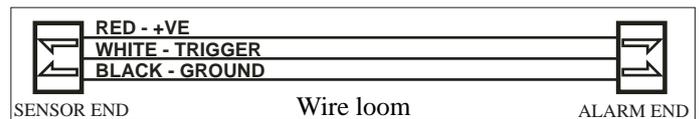
Status LED

Near the middle of one edge is a status LED, this LED lights up red when either detectors is triggered. It is not possible to determine which detector is active, unless one detector is turn down to absolute minimum.



Socket and Wire Loom

Located at the opposite end to the adjustment screws is the sensor's wiring socket. The SEN-009 wire loom is designed to plug directly into Cyclops three way sockets.

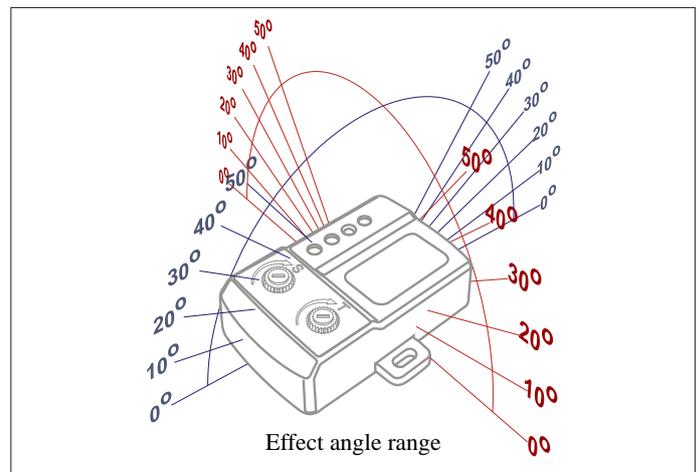


INSTALLATION

There are two sets of considerations for mounting the SEN-009, installers must read both before mounting the sensor.

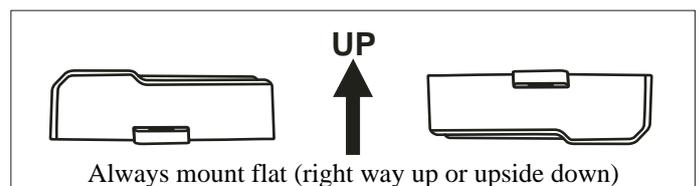
Mounting requirements for tilt sensing

The installer may mount the SEN-009 at any angle and still detect changes. However, sensitivity is reduced once the sensor exceeds 50o.



For best results, the sensor base should be flat relative to the floor or the roof of the car. Location should be central and rigid within the vehicle.

Mounting requirements for shock sensing



Effective shock sensing requires the SEN-009 to be rigidly attached to the structure of the vehicle, so all vibration is passed to the sensor. Unlike tilt sensing, the shock detector will work at any angle.

OPERATION

Once power is applied, the SEN-009 will remain idle for 15 seconds. If vibration or change of angle is detected the countdown will reset.

When the 15 second period expires, the SEN-009 will set it's current angle as it's reference angle.

- Any change in angle greater than 2 degrees will trigger the sensor. After each trigger the SEN-009 will restart a new idle cycle.
- Any vibration above the set threshold will also trigger the sensor, as with the tilt function, the sensor will enter a 15 second idle cycle.

Both the detectors output the triggered signal via the same wire. Therefore a shock will not trigger the sensor within 15 seconds of a tilt trigger (and vice versa).

SENSOR SETUP

If either tilt or shock detector is not required, simply turn sensitivity to minimum (anti-clockwise). This will not disable each detector, but simply reduce the likelihood of the detector to achieve a trigger.

To setup the SEN-009 for use with both shock and tilt see the procedure below:

- Set both detectors to minimum (anti-clockwise).
- Set the "T" dial to 25%
- Arm the alarm
- Wait 15 seconds
- Jack up the car in increments.
- Watch sensor status LED for trigger state.
- If sensor fails to detect new angle, disarm alarm and increase and repeat previous four steps until sensor trigger satisfactorily.

Once the tilt detector has been set do not move the "T" dial. Now set the shock sensor sensitivity.

- Set the "S" dial to 25%
- Arm the alarm
- Wait 15 seconds
- Kick the driver's tyre
- If the sensor fails to detect the bump, disarm alarm, increase shock sensitivity and repeat the previous three steps.

Installer may also like to try hitting one of the windows or windshield with a clenched fist (not too hard beware of breaking the glass).

SPECIFICATIONS

Operating voltage	10 - 15 volts DC
Operating current	
Idle	3mA
Triggered	6mA
Trigger Output	
Polarity	Negative
Max current max	300mA
Back EMF	Protected
Trigger Pulse	1 second
Power-up Idle	15 seconds
Physical Size	
Height	15mm
Width	45mm
Length	51mm

NON STANDARD INSTALLATION

When a purpose built sensor input is not available, the SEN-009 can be configured to trigger the door input of any alarm system. The main complication arises from the dome light current. If the SEN-009 attempts to ground the interior light, the current will exceed the 300mA of the output transistor. The following circuit diagram shows how to configure the additional relay.

