

BossPac WASP™

(Wireless Acceleration Sensor Puck)

For use with the
BossPac NEST™



WASP

- Acceleration, Velocity, & Temperature
 - CSA Class I Div 2*
 - ATEX Zone 0 Pending

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WARNING

READ THIS MANUAL BEFORE OPERATING THIS DEVICE.

WARNING - EXPLOSION HAZARD

**SUBSTITUTION OF COMPONENTS MAY IMPAIR
SUITABILITY FOR CLASS 1 DIVISION 2.**

WARNING - EXPLOSION HAZARD

**DO NOT REPLACE OR REMOVE BATTERIES UNLESS AREA IS
KNOWN TO BE NON-HAZARDOUS.**

WARNING

**TO PREVENT EQUIPMENT FAILURE AND/OR DAMAGE
AND/OR PERSONAL INJURY, REGULAR CALIBRATION
AND INSPECTION OF THIS DEVICE IS REQUIRED.**

WARNING – STRONG MAGNET

**Strong magnetic field can cause personal injury or death to
individuals with medical implants or other magnetic field sensitive
medical conditions.**

Keep tools and other metal objects away.

Introduction

The BossPac WASP is a wireless acceleration, velocity and temperature sensing device. It features a 3 axis accelerometer, with a frequency range of 2 to 400 hertz and an amplitude of +/- 16 G.

With a mounting point temperature range of -40C to +185C the WASP can be mounted directly to valve caps allowing the measurement of acceleration, velocity and temperature.

With the ability to monitor up to 64 WASP's, the BossPac NEST (Network Electronic Sensor Terminal) can be used to monitor up to 64 locations on equipment from just one controller.

Installing the Battery

Each sensor puck is shipped with a separate battery module. The battery module contains a non-removable long lasting lithium battery.

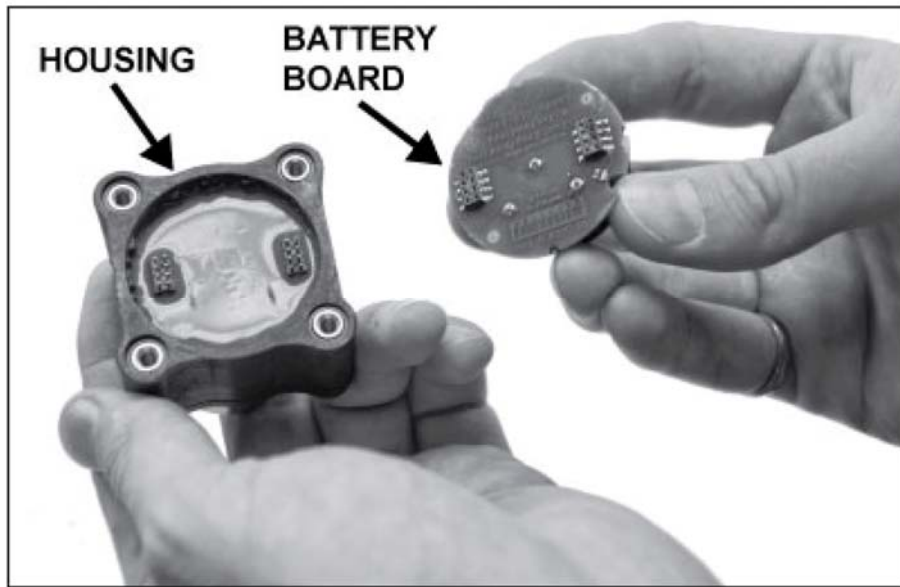
WARNING - EXPLOSION HAZARD
DO NOT REPLACE OR REMOVE THE BATTERY UNLESS AREA IS
KNOWN TO BE NON-HAZARDOUS.

To turn on and activate each sensor puck you must carefully attach the battery board to the sensor unit. Plug the pins on the battery board into the corresponding connectors on the sensor puck. See photo on the next page.

Once the pins make contact a LED on the underside of the battery module will flash to indicate power on. During this time, the WASP device performs a power-on self test (POST). If all is well, the LED will flash quickly for a couple of seconds and then turn off.

Should the POST fail, the device goes into a non-operational state and flashes the LED in discernable patterns to help diagnose the source of the problem. See Appendix A of this manual for information on troubleshooting the LED flash codes.

***NOTE: Do not remove the screws from bottom of the sensor puck.
Doing so will void the product's warranty.***



Installation

When setting up measurement points on equipment it is important to take into account bearings, bearing support housing, and other structural parts that will respond to the vibrational forces the equipment will be subjected to.

To best monitor vibrational behaviour at each measuring point, it is necessary to take measurements in 3 perpendicular directions (X,Y,Z axis). Figures 1 to 3 below show suggested measurement points for 3 types of machinery. The WASP™ measures 3-axis by default.

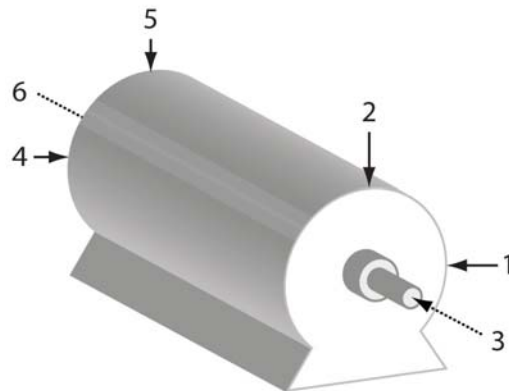
Detailed recommendations for specific machine types are provided in ISO document 10816.

The sensor pucks can be attached to the desired equipment by either magnet, epoxy or stud mount. When using the magnet mount place a small dollop of thermal paste on the center of the magnet prior to mounting.

The WASP™ has an effective range of up to 60 meters from the antenna.

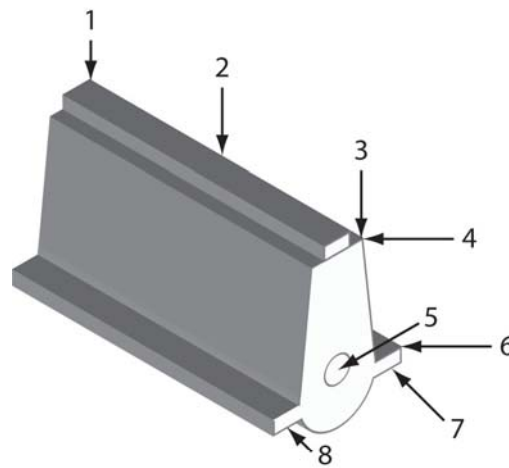
Note: To ensure effective wireless transmission between the sensor pucks and the antenna it is recommended that there is a direct line of sight between the units.

Figure 1



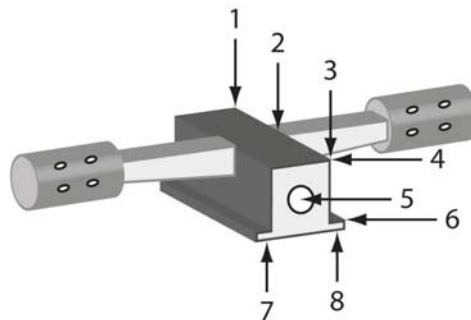
Measuring points for small electrical machines

Figure 2



Measuring points for reciprocating engines

Figure 3



Measuring points for horizontal opposed machines

Thermal Calibration of WASPs

To ensure the greatest accuracy of the monitored variables, it is advised to do thermal calibration of each WASP unit. The process of thermal calibration is as follows:

1. Ensure the machinery for which the WASP is to be attached is at operating temperature.
2. Place the WASP(s) units at their desired mounting points using thermal paste. Allow 15 minutes for the temperature to stabilize.
3. Using a reference temperature source (ie. IR Temperature Gun¹), record the temperature value at the valve cap at the mounting point of the WASP unit.
4. At the NEST, adjust the display temperature to match the value of the thermometer gun using the temperature calibration function. (See the section on temperature calibration in the *Setting Temperature Warning, Critical Error, and Offset Limits* section in the NEST User Manual).

Notes:

- ¹. IR Temperature Guns commonly have accuracy ratings of +/- 2% and the readings can be affected by the distance and angle that the measurements are taken from.

Appendix A

Troubleshooting LED Flash Codes

The following table contains a brief description of all flash codes reported by the device:

FLASH CODE	DESCRIPTION	ACTION
1 Flash: Accelerometer Failure	Device cannot communicate with the accelerometer	Not user serviceable. Replace sensor.
2 Flashes: Battery Failure	Device battery is either too low or too high.	Replace Battery as per the Battery Installation section of this manual.
3 Flashes: Temperature Sensor Failure	Temperature Sensor readings are outside of the start-up temperature window, from -40°C to 100°C	Ensure that the mounting point temperature is within the allowable temperature range and replace the battery as per the Battery Installation section of this manual. If error persists the sensor may need to be replaced.
4 Flashes: Radio Failure	Device could not initialize the radio.	Not user serviceable. Replace sensor.
5 Flashes: Regulator Failure	The onboard regulator is not able to maintain the required voltage for correct operation.	Replace Battery as per the Battery Installation section of this manual, if error persists the sensor may be faulty and need replacement.

Support

For support contact BossPac Engineering & Technology toll free at
866-616-1226.

FCC & IC Statements

FCC Class B Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by BossPacEngineering Technology Inc. may void the user's authority to operate the equipment.

IC RSS 210

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC/IC RF Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme à l'exposition aux radiations de FCC et d'Industrie Canada établies pour un environnement non contrôlé.

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