VIBRATION ANALYSIS HARDWARE

Product Manual

MNX10003 / REV D

MODEL MH130

MODEL MH101-1B

MODEL MH107-1B / MH107-1A

MODEL MH118

Mounting Hardware

Contents

Section I
Overview

Introduction

This document contains information on the operation, installation and maintenance of accelerometers and hardware. This manual is an overview of the system and references the specific component manuals. User manuals are provided with the system for all configurable internal components.

Description

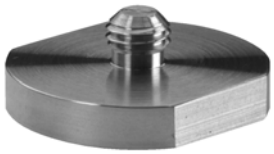
A vibration sensor must be properly installed to ensure quality data has been collected. Installation includes mounting options for the sensor (adhesive, magnet, permanent, etc) as well as proper connection between sensor and data collector. Adhesive mounting can be performed in a variety of different ways, with numerous applicable adhesives, ensure that the adhesive used in installation matches the application (i.e. gap filling adhesives for fin mounting). Adhesive mounting offers a moderate frequency limit.

Permanent mounting is accomplished using the MH117 spot face tool and a mounting stud. This mounting option allows for the highest vibration frequency limit.

Communication between sensor and data collector is accomplished through proper cabling and connections. Ensure that correct wiring is in place between sensor and data collector.

Section II
Installation

MH130 Mounting Pads/Magnet Targets
With Protective Cap Cover



MH101-1B Integral Stud
Mounting Pad

MH107-1B Quick Disconnect Stud
with
MH107-1A Quick Disconnect
Receptacle

Adhesive Mounting Installation:
(MH130 Series, MH107-1B, MH101-1B Mounting Hardware)

1. This mounting technique requires a clean surface, free from any residue or paint, to ensure proper bonding of the adhesive.
2. A smooth, flat mounting surface is desirable, and can be achieved by milling or grinding at the surface where the mounting disk is to be installed.
3. Place a small portion of adhesive on the underside of the mounting base. Flat Surface Adhesive Mounting (*Figure 1*)
4. Firmly press down mounting disk to mounting area to force the adhesive out from under the disk.
5. Hold disk onto surface until the adhesive can support the weight of the mounting disk, ensuring the disk does not move or “slide” on the adhesive.
6. Allow full cure for adhesive prior to installing sensor.

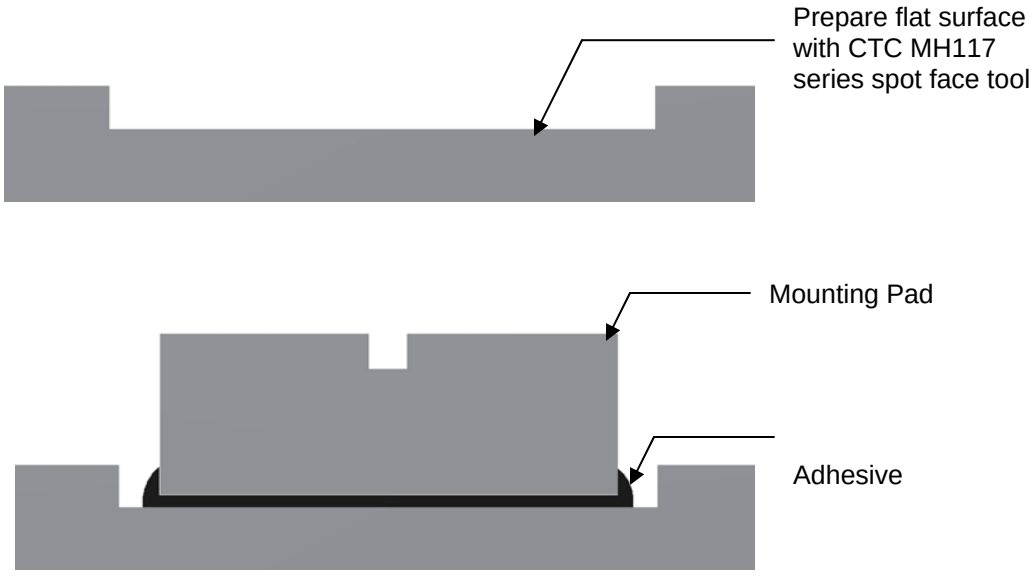


Figure 1. Mounting Surface

Motor Fin Mount Probe/Pad Installation:

(MH118 Series Mounting Hardware)

1. Prepare cooling fins on motor for mounting by scraping or grinding any paint or debris between cooling fins.
2. Clean mounting area with a spray degreaser that will not leave a thin film lubricating residue.
3. Mix adhesive.
4. Apply adhesive to the sides and the bottom of the probe portion of the motor fin mount probe/pad (the area is roughened to enhance the bonding area).
5. Place the motor fin mount probe/pad between the motor fins at the location desired.
    - Correct motor fin mount selection is important. The probe must fit in between the motor fins, and the bottom of the probe must contact the motor casing.
    - For motors that have a space greater than ½" between each fin, motor fin mount probe pads with a thickness of ½" are available and will reduce the amount of adhesive needed.
6. Firmly press the motor fin mount probe/pad into place, ensuring the bottom of the motor fin mount probe/pad is touching the motor casing (this contact area is where the vibration is transferred from the motor to the sensor).
    - The tip of the motor fin mount probe/pad should be as flat against the motor casing as possible. *(Figure 2)*
    - The motor fin mount probe/pad should not be resting on the top of the fins – if it does, then the bottom of the probe may not be in direct contact with the motor casing. *(Figure 3)*

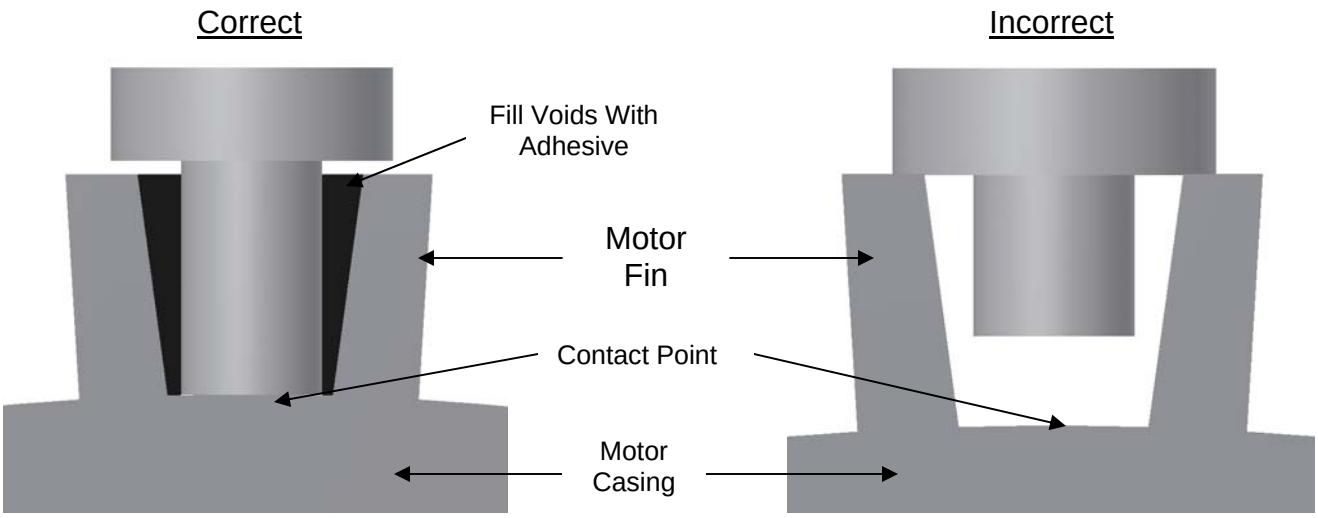


Figure 2. Installation of Motor Fin Mounts

7. Use a spatula to redirect any epoxy that has been displaced from the mounting area when pushing the fin mount probe/pad into place.
8. Fill in any remaining voids with the adhesive to ensure the motor fin mount will be fixed in place.
9. Allow full cure for the adhesive prior to installing sensor.

Permanent/Stud Mounting Surface Preparation:

This mounting technique requires a smooth, flat mounting surface while tapping a ¼-28 or 10-32 hole for stud mounting. The smooth, flat surface and drilling of a pilot hole can be achieved together by using the MH117 Series Installation Tool Kit.

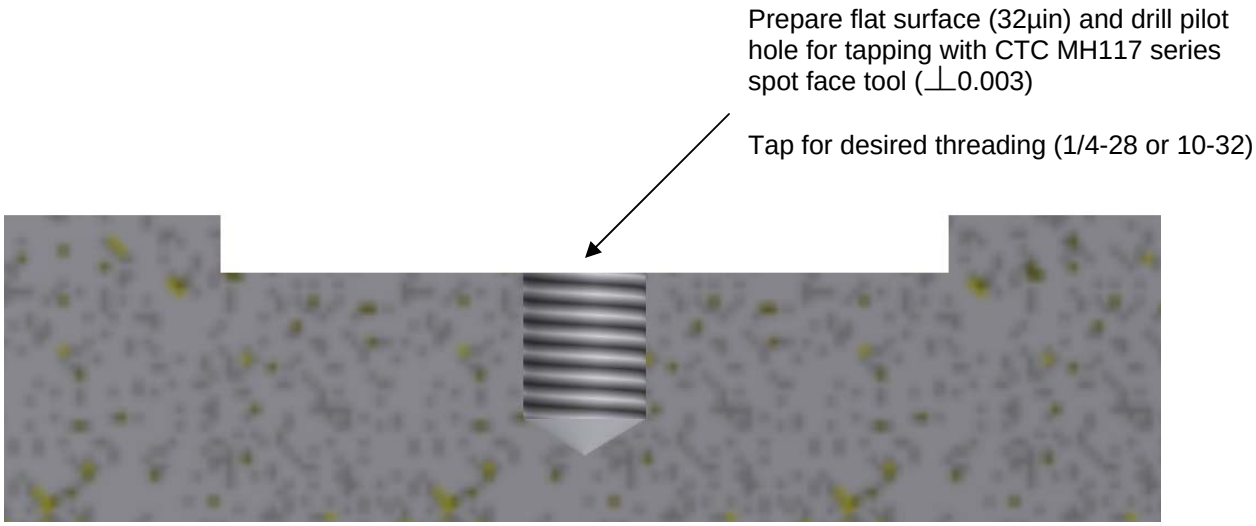


Figure 3. MH107-1B or Stud Mounting Accelerometer directly to machine surface

Sensor Installation onto Mounting Hardware/Stud Mounting:

1. Hand tighten the sensor to the mounting disk and tighten using 2 to 5 foot-pounds mounting torque.
2. The mounting torque is important to the frequency response of the sensor for the following reasons:
    a. If the sensor is not tight enough, proper coupling between the base of the sensor and the mounting disk will not be achieved.
    b. If the sensor is over tightened, stud failure may occur.
3. The sensor is now ready to be connected to the cable.

NOTE: A coupling agent (such as Loctite Thread-Locker Part Number 242 or an epoxy) will maximize the high frequency response of your hardware, but is not required.

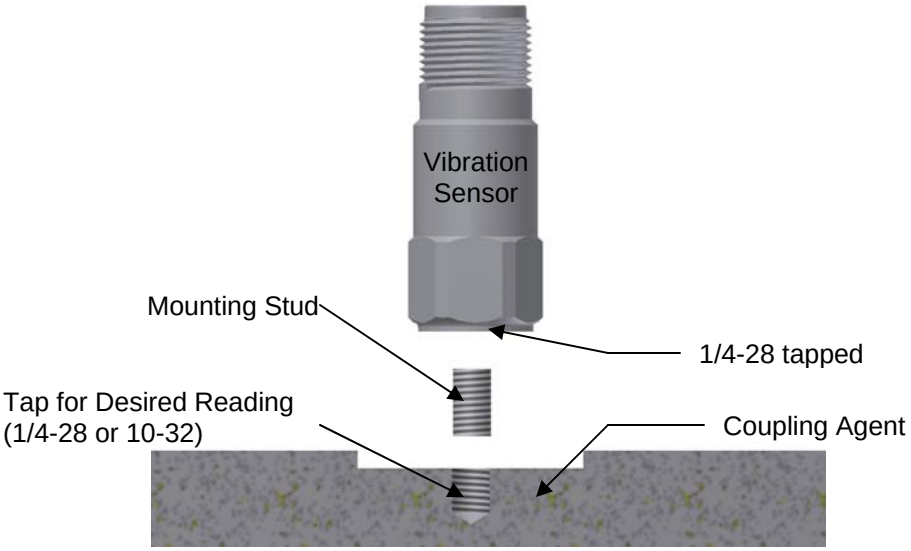


Figure 4. Stud Mounting

Accelerometers

All CTC accelerometers feature all welded stainless steel construction for survival in harsh factory environments. A dual case design shields the sensing element from RFI & EMI interference. PZT ceramic sensing elements are utilized to provide the highest signal to noise ratio available, which is critical for use with data collectors, which often integrate an acceleration signal to velocity. Low Frequency noise (ski slopes) are avoided by utilizing an accelerometer with a low noise PZT ceramic sensing element. Shear mode element construction is utilized in low frequency models, which virtually eliminates erroneous output due to thermal transient interference. Thermal transient interference is only an issue at extremely low frequency, and typically is not a factor when utilizing 100 mV/g multi purpose accelerometers, as the low frequency capability of a multi purpose

accelerometer is generally not capable of measuring frequencies that occur at the thermal transient level. Two pin MIL Spec connectors are used to carry the signal output from the accelerometer, protecting the shielding and hermetic sealing of the accelerometer. Pin "A" is utilized for Power / Signal (+), and Pin "B" is utilized Signal / Common (-). The case of the accelerometer is electrically grounded to machinery that it is mounted to, and electrically isolated from Pin "A" and Pin "B" (see illustration).

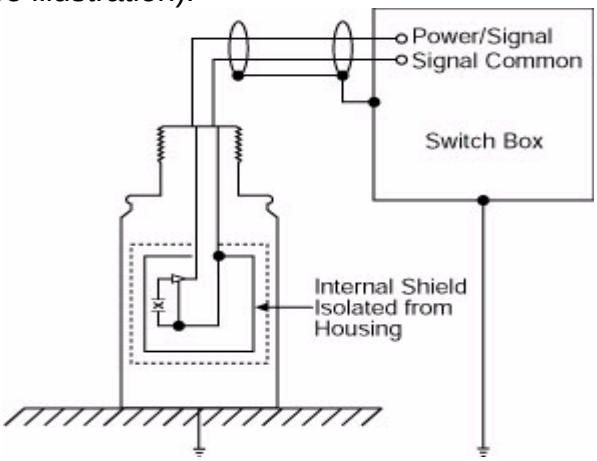


Figure 5. Proper Grounding Of Twisted Shielded Pair Cable

Cabling

CTC Cables are specially manufactured to transmit signals over long distances, while withstanding the rigorous physical demands of harsh factory environments. All CTC cables will accurately transmit accelerometer signals a minimum of 500 feet in a switch box, with NO signal loss or distortion. In many cases, CTC cables will transmit signals up to 2,000 feet (contact an application engineer at CTC for more details). All CTC cables feature twisted shielded pair construction, for interference rejection. A drain wire is provided with the shield, for quick and professional ground. For all CTC cabling, the red conductor is utilized for the Signal/Power (+), the black conductor is utilized for the Signal/Common (-) and the drain wire/shield should be connected to earth ground (See illustration above). Proper grounding of cable shielding will insure clean and interference free data, CTC model's CB102 and CB103 cable incorporate a strength cord within the construction of the cable. Strength cords relieve the tension of the conductors when a cable is being pulled through conduit or tight spaces.

Section IV
Maintenance

General

There are no customer replaceable parts. The mounting hardware has been designed for trouble-free service under normal operating conditions.

Warranty

If any CTC vibration analysis hardware product should ever fail, we will repair or replace it at no charge.

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