

UNIVERSAL VIBRATION SENSOR MOUNT

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The present paper describes universal vibration sensor mount devices for attaching sensors to the machinery. Some types of machinery vibration sensors need to be mounted in a particular orientation relative to the machine being monitored. One example is two-axis and three-axis MEMS accelerometers used to detect machine-critical acceleration vector components. Another example is sensors with side connectors or cables whose orientation is restricted by space limitations. In many instances, vibration machinery sensors constructed as could be mounted using a central bolt that going throu the sensor body threads into a bore on the machine body. Such sensors are usually more expensive that similar sensors with solid body. In some cases, proper sensor orientation is achieved by simply gluing the sensor to the machine body. This makes it difficult to remove the sensor if it needs to be replaced. There are also proprietary sensor mounts designed for specific sensors, but these lack versatility. We designed the universal sensor mount that can be used to mount a wide variety of machinery sensors at precise orientations. The idea here is that sensor module mounting member is locked in a selected rotational position using the adjustable locking member as shown on the Figure 1. The sensor module is attached to the universal sensor mount by threading the sensor module onto the sensor module mounting member until tight. A determination is made whether the sensor module is substantially aligned with one or more reference axes of the machine. If not, the sensor module is detached from the universal sensor mount. The sensor module mounting member is unlocked and rotated to another selected rotational position that will substantially align the sensor module with the one or more machine reference axes as shown on Figure 2. The sensor module mounting member is then relocked in another selected rotational position and sensor module is reattached to the universal sensor mount.

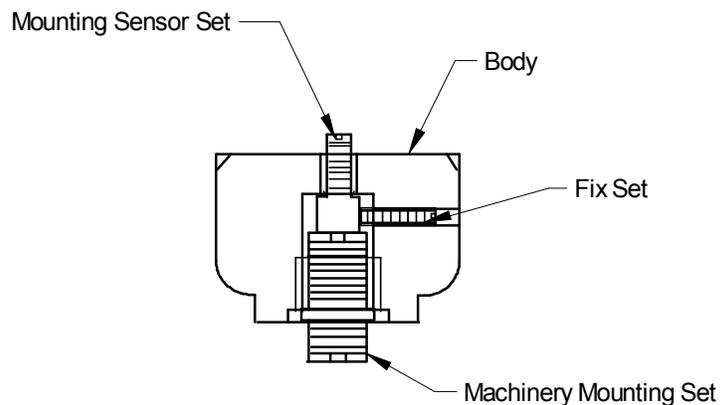


Figure 1. Structure diagram of universal sensor mount

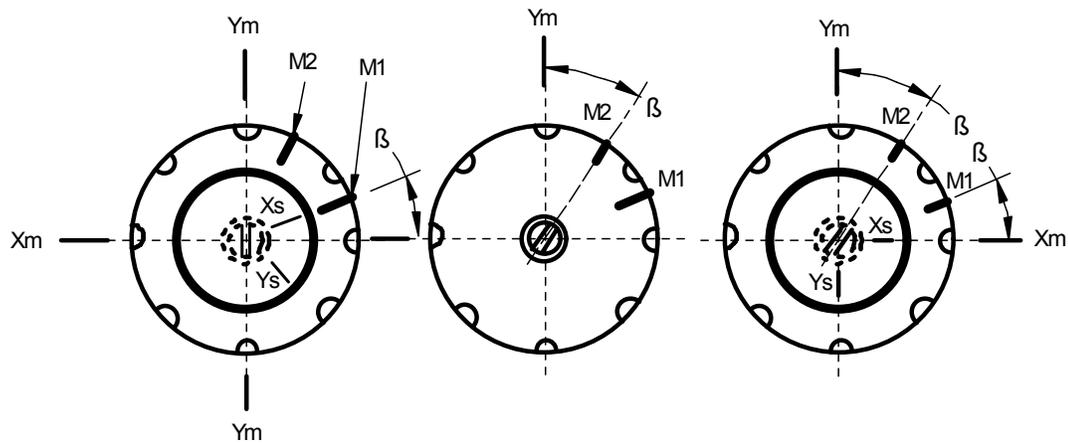


Figure 2. Illustration of the sensor mounting technology

When the mount fixed in a machinery body permanently the mounting sensor set flexes slit should oriented in the one of machinery axis (Y_m in the Figure 2). Then the side set screw (fix set) fixes the sensor mounting set and sensor should be screwed on it top completely. The mark then applied in the mount side where the particular sensor axis stops (M_1 in the Figure 2). After that sensor should be took out, mounting set flex and it slit turn on the watch hand direction in the particular angle (β in the Figure 2) between mark and machinery axis in parallel with which the particular sensor axis should be. Extra mark might be used to support that operation (M_2 in the Figure 2) Then mounting set should fixed by side set screw and sensor should be mounted back. Now sensors axis will be directed in parallel with machinery axis. In a case sensor needed to be replaced the mount remains in the machinery and just the operation of adjusting the mounting set slit orientation should be repeated.