

Sensor Mounting

When using Piezoelectric sensors to measure vibration, the sensor must directly contact the machine surface. The more intimate and stiff the contact between sensor and the machine, the better the ability to couple and measure high frequency signals.

The sensor should be mounted in a location that minimizes the vibration transmission route from the item being monitored (bearing) through the machine to the sensor. Avoid mounting the sensor on thin sections or vibration-free areas (antinodes).

Mounting Configurations

There are multiple mounting configurations that are used to couple the sensors to the machine surface. Figure 1 illustrates the various types of mounting configurations.

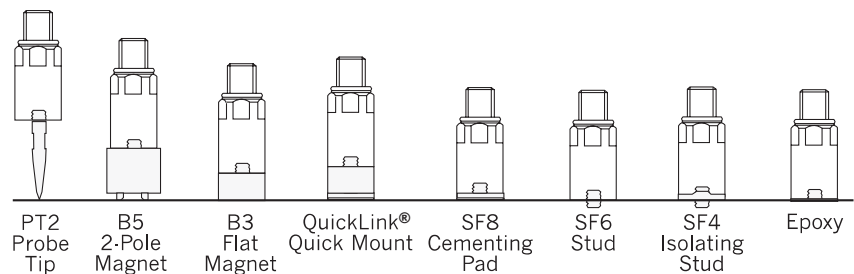
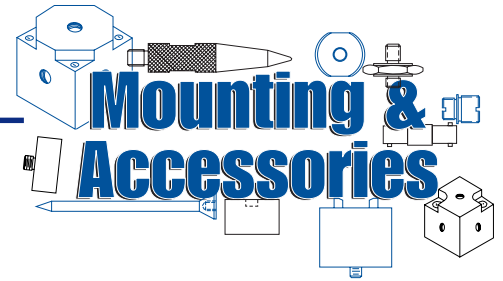


Figure 1: Types of Mounting Configuration

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Temporary Mounting

The use of magnet bases or probe tips connection is convenient and quick for many applications, but they produce a significantly different response at higher frequencies compared to stud and cemented pad measurements. Attaching magnetic bases or probe tip (stingers) allow the sensor to be easily moved from point to point. Quick mounts, however, combine the capabilities of a stud with the speed of a magnet. The most significant disadvantage of the magnet base or probe tip is the



lower resonant frequency of the coupled system. The more intimate the contact between sensor and the machine, the better the ability to couple and measure high frequency signals.

Probe Tips

Probe tips require very little surface preparation and are easy to use. Tips should be slightly rounded at the point and maintained free of burrs.

Magnets

In all applications, the machine surface must be magnetically attractive and free of paint chips and scale. Painted surfaces are acceptable, but should be clean and well maintained. The magnet must be clean and free of metal particles and burrs. Magnets are available for flat and curved surfaces. Coupling fluids, such as oil, greatly improve measurements with flat bottom magnets and should be used wherever possible.

Quick Mounts

Quick mounts allow the sensor to be mounted rapidly with little effort. The coupling resonance approaches cementing pad and stud mounted configurations. Quick mounts consist of a special adapter mounted to the sensor and multiple mating pads on the machine. The mating pad can be stud mounted or cemented to the mounting location. The QuickLINK[®] system requires a less than one turn to mount the sensor, making walkaround collection faster without compromising repeatability. QuickLINK[®] is only offered by Wilcoxon.

Permanent Mounting

Direct stud mounting, epoxy, and cementing pads are used for permanent installations. The sensor can be directly mounted by tapping a hole into the structure and attaching the sensor with a threaded stud. Stud mounting is viewed by users as the most reliable way to mount a vibration sensor. Stud mounting will attain the maximum sensor frequency range. Cementing pads can be epoxied in place of the tapped hole; the sensor is then mounted to the pad. Cementing pads approach the capabilities of stud mounts when used properly. Procedures should be evaluated with respect to frequency response, sensor/shield grounding, and installation requirements. In some cases, the sensor can be mounted directly to the machine using epoxy. Adhesive selection is critical for long-term reliability.

Threaded Stud


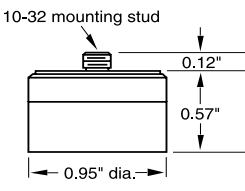

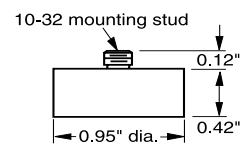

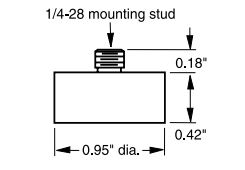

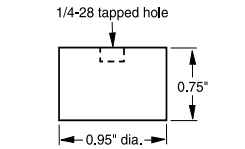

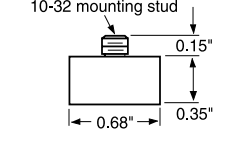

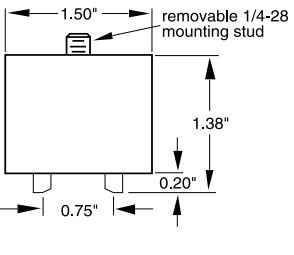
Stud mounting requires a tapped hole drilled directly into the structure. A threaded stud provides electrical and mechanical connection between the sensor and machine. The sensor requires a flat spot faced surface with a perpendicular tapped hole.

Cementing Pad


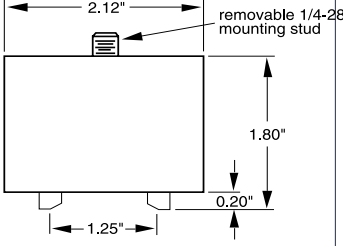









Cementing pads eliminate tapping into the structure, but provide high frequency capability approaching stud mounts. The flat side is bonded to the machine with an appropriate adhesive. The opposite side contains a 1/4-28 stud for mounting the sensor. The proper installation leaves the pad and the sensor housing electrically isolated from ground.

Request *Technical Note 21, Mounting Considerations* for detailed procedures.


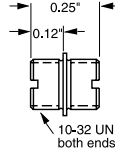

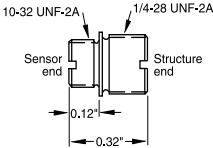

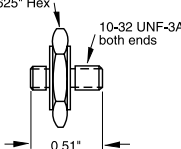

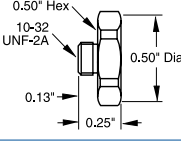

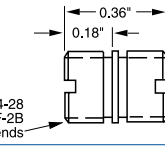

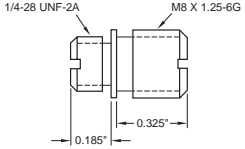

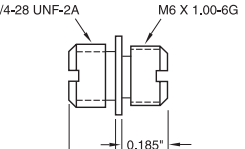

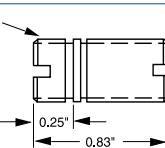
Mounting Hardware & Accessories

MODEL	IMAGE	DRAWING	DESCRIPTION
B1A			Rare earth magnetic mounting base, 10-32 stud, isolated, 0.95" diameter, 40 lbs. force. Electrically isolates the sensor from ground to prevent ground loops. Use with 10-32 tapped hole sensors.
B2A			Rare earth magnetic mounting base, 10-32 thread, non-isolated, 0.95" diameter, 40 lbs. force. Use with 10-32 tapped hole sensors.
B3			Rare earth magnetic mounting base, 1/4-28 stud, non-isolated, 0.95" diameter, 40 lbs. force. Use with 1/4-28 tapped hole sensors.
B3-1			Rare earth magnetic mounting base, 1/4-28 tapped hole, non-isolated, 0.95" diameter, 40 lbs. force. Use with 1/4-28 bolt thru sensors.
B4			Rare earth magnetic mounting base, 10-32 stud, non-isolated, 0.68" diameter, 40 lbs. force. Use with 10-32 tapped hole sensors in confined areas.
B5			Two-pole magnetic mounting base, 1.5" diameter, 30 lbs. force. Removable mounting stud for use with bolt thru sensors. Specify 1/4-28 mounting stud or 10-32 adaptor stud when ordering. Use on curved surfaces. Recommended for low frequency measurements or where other mounting methods are not practical. <i>*Note: B5 is shipped with a protective washer. Washer must be removed before using the magnet.</i>


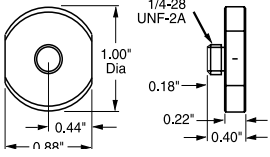

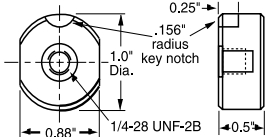

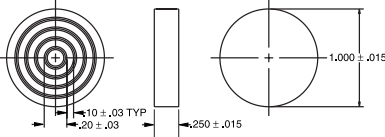


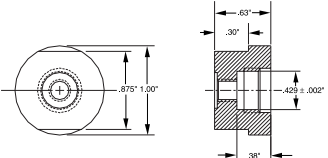

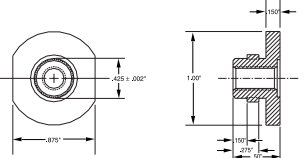

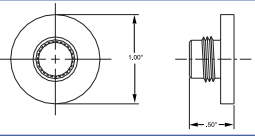

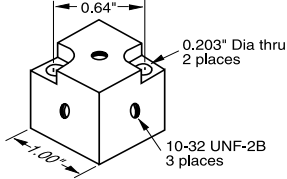
Mounting Hardware & Accessories

MODEL	IMAGE	DRAWING	DESCRIPTION
B6			Two-pole magnetic mounting base, 2.12" diameter, 70 lbs. force. Removable mounting stud for use with bolt thru sensors. Specify 1/4-28 mounting stud or 10-32 adaptor stud when ordering. Use on curved surfaces. Recommended for low frequency measurements or where other mounting methods are not practical. <i>*Note: B6 is shipped with a protective washer. Washer must be removed before using the magnet.</i>
FM101			Fin mount, 0.500 thick, 1.25 long
FM102			Fin mount, 0.500 thick, 2.00 long
FM103			Fin mount, 0.250 thick, 1.75 long
FM104			Fin mount, 0.250 thick, 1.00 long
PC420 Conduit Housing		<p style="text-align: center;">Conduit Housing</p> <p style="text-align: center;">Base Conduit Adapter</p>	Connects to existing 1" conduit and provides additional protection from caustic environments.


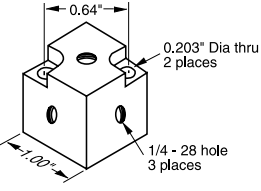

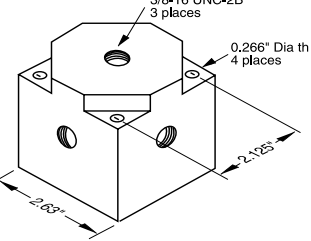





Mounting Hardware & Accessories

MODEL	IMAGE	DRAWING	DESCRIPTION
SF1			Mounting stud, 10-32 UNF both ends, stainless steel, recommended mounting torque 18 in-lbs.
SF3			Mounting stud adapter, adapts 10-32 UNF to 1/4-28 UNF, stainless steel, recommended mounting torque 18 in-lbs.
SF4			Mounting stud, 10-32 UNF both ends, isolated, stainless steel with non-conductive layer of epoxy to prevent ground loops, recommended mounting torque 18 in-lbs.
SF5			Epoxy mounting stud, 10-32 thread, 0.50" hex, anodized aluminum, recommended mounting torque 18 in-lbs.
SF6			Mounting stud, 1/4-28 UNF both ends, stainless steel, recommended mounting torque 24 in-lbs.
SF6M			Mounting stud, 1/4-28 UNF to M8 x 1.25 (metric), recommended mounting torque 24 in-lbs.
SF6M-1			Mounting stud, 1/4-28 UNF to M6 x 1.00 (metric), recommended mounting torque 24 in-lbs.
SF7			Mounting stud, 3/8-16 thread both ends, stainless steel, see specification sheet of instrumentation being used for recommended mounting torque.

Accessories

MODEL	IMAGE	DRAWING	DESCRIPTION
SF8			Cementing pad, 1/4-28 integral stud, 1" diameter, stainless steel, recommended mounting torque 24 in-lbs.
SF8-2			Cementing pad, 1/4-28 tapped hole, 1" diameter, stainless steel, recommended mounting torque 24 in-lbs. Includes key notch for constant axis orientation; use with 993B Series Triaxial Accelerometers.
SF11			Magnetic mounting pad, stainless steel.
ST101			Spot face tool, 1.25" diameter, pilot drill for 1/4-28 hole. Drill depth is adjustable.
QB-1			QuickLINK ^{CS} Sensor Base, adapter mates to 1/4-28 sensor, stainless steel. Adapts to sensor for walkaround data collection. Attaches sensor to any QuickLINK mounting pad in less than one turn.
QP-1			QuickLINK ^{CS} Stud Mounting Pad, 1/4-28 tapped hole base, stainless steel. Allows quick mount of sensors in less than one turn. Use of one QB-1 on sensor required. Easy conversion to permanently mounted sensors.
QP-2			QuickLINK ^{CS} Cementing Pad, flat base, stainless steel. Allows quick mount of sensors in less than one turn. Use of one QB-1 on sensor required. Easy conversion to permanently mounted sensors.
TC1			One inch triaxial mounting cube, 10-32 tapped holes, anodized aluminum, non-conductive coating prevents ground loops. Weight 36 grams.

Mounting Hardware & Accessories

MODEL	IMAGE	DRAWING	DESCRIPTION
TC1B			One inch triaxial mounting cube, 1/4-28 tapped holes, anodized aluminum, non-conductive coating prevents ground loops. Weight 36 grams.
TC2			Triaxial mounting cube for 731A, 3/8-16 tapped holes, anodized aluminum, non-conductive coating prevents ground loops. Weight 500 grams.
A20507			Barrier strip, STAHL 8903 / 31 - 315/050/70, for Intrinsic Safety requirements.
A20512			Barrier strip, MTL 728+, for Intrinsic Safety requirements.
A48038			Crimp Tool for use with R6Q or R6SL/R6GSLI connectors.
A61059			Epoxy, Nozzle, EPX
SILPAK			Silicone Grease, 1.5 cc Tube, Dow Corning [DC 111] for use with Splash proof Connectors. Optional 5.3 Ounce Tube, Dow Corning [DC 111].