

# All the Accessories You Need To Gather Data On Simulators

SpectraQuest's simulators are excellent for performing vibration and rotor dynamics experiments and creative/studying typical machinery defects. However, a detailed investigation of a particular phenomenon requires additional tooling and instrumentation. A list of the accessories most frequently used when performing studies has been provided for your reference.

### Accelerometers

These industrial ICP accelerometers have a ceramic sensing element of annular shear design in a top-exit, heretically sealed, stainless steel housing. All of our accelerometers are case isolated and provide excellent resolution and durability in noisy industrial environments

### Low Cost Single Axis Accelerometer (SQI608A11)

- Low-cost, general purpose, industrial ceramic shear ICP accel, \* 100mV/g, 0.5 to 10k Hz, top exit, 10-ft integral cable
- Sensitivity: (±15%) 100 mV/g (10.2 mV/(m/s<sup>2</sup>)) \*\*
- Frequency Range: (±3dB) 30 to 600000 cpm (0.5 to 10000 Hz)
- Measurement Range: ±50 g (±490 m/s<sup>2</sup>)
- Mounting: Stud
- Electrical Connector: 10' long cable to BNC connector
- Also comes in 4 pack and 8 pack

### Low Profile Single Axis Accelerometer (SQI602D01)

- Low profile, industrial, ceramic shear ICP® accel., 100 mV/g, 0.4 to 8000 Hz, side exit, 2-pin connector
- Sensitivity: (±10%) 100 mV/g (10.2 mV/(m/s<sup>2</sup>))
- Measurement Range: ±50 g (±490 m/s<sup>2</sup>)
- Electrical Connector: 2-Pin MIL-C-5015
- Electrical Connection Pos: Side

### Ring Style Single Axis Accelerometer (SQI 606B01)

- Ring-style, industrial, ceramic shear ICP® accel, 100 mV/g, 0.5 to 10kHz, side exit, 2-pin conn.
- Sensitivity: (±20%) 100 mV/g (10.2 mV/(m/s<sup>2</sup>))
- Measurement Range: ±50 g (±490 m/s<sup>2</sup>)
- Mounting: Through Hole
- Electrical Connector: 2-Pin MIL-C-5015
- Electrical Connection Pos: Side

# More accelerometers and cables are also available





### Precision Single Axis Accelerometer (SQI 622A11)

- General purpose, industrial, ceramic shear ICP® accel, 100 mV/g, 0.2 to 10kHz, top exit, 10-ft integral cable
- Sensitivity: (±5%) 100 mV/g (10.2 mV/(m/s<sup>2</sup>))
- Frequency Range: (±5%) 35 to 240000 cpm (0.58 to 4000 Hz)
- Measurement Range: ±50 g (±490 m/s<sup>2</sup>)

### Precision Ring Style Single Axis Accelerometer (SQI625B01)

- Ring-style, industrial, ceramic shear ICP® accel, 100 mV/g, 0.2 to 10.5kHz, side exit, 2-pin conn.
- Sensitivity: (±5%) 100 mV/g (10.2 mV/(m/s<sup>2</sup>))
- Frequency Range: (±5%) 30 to 390000 cpm (0.5 to 6500 Hz)
- Measurement Range: ±50 g (±490 m/s<sup>2</sup>)
- Mounting: Through Hole
- Electrical Connector: 2-Pin MIL-C-5015
- Electrical Connection Pos: Side

### High Frequency Single Axis Accelerometer (SQI623C10)

- High-freq., industrial, ceramic shear ICP® accel, 10 mV/g, 0.8 to 15k Hz, top exit, 10-ft integral cable
- Sensitivity: (±5%) 10 mV/g (1.0 mV/(m/s<sup>2</sup>))
- Frequency Range: (±5%) 144 to 480000 cpm (2.4 to 8000 Hz)
- Measurement Range: ±500 g (±4905 m/s<sup>2</sup>)
- Electrical Connector: Molded Integral Cable
- Electrical Connection Pos: Top

### Low Frequency Single Axis Accelerometer (SQI626B11)

- Low freq., industrial, ceramic shear ICP® accel, 100 mV/g, 0.2 to 10kHz, top exit, 10-ft integral cable
- Sensitivity: (±5%) 100 mV/g (10.2 mV/(m/s<sup>2</sup>))
- Frequency Range: (±5%) 30 to 300000 cpm (0.5 to 5000 Hz)
- Measurement Range: ±50 g (±490 m/s<sup>2</sup>)
- Electrical Connector: Molded Integral Cable
- Electrical Connection Pos: Top

### High Temperature Single Axis Accelerometer (SQI HT622A01)

- Sensitivity: (±5%) 100 mV/g (10.2 mV/(m/s<sup>2</sup>)
- Frequency Range: (±5%) 35 to 240000 cpm (0.58 to 4000 Hz)
- Measurement Range: ±50 g (±490 m/s<sup>2</sup>)
- Electrical Connector: MIL-C-5015
- Electrical Connection Pos: Top











### Velocity Sensor (SQI VO622A01)

- \*\* 100 mV/in/sec., top exit, 2-pin conn.
- \* Sensitivity: (±10%) 100 mV/in/sec (3937 mV/m/sec)
- \*\* Frequency Range: (±3dB) 180 to 540000 cpm (3 to 9000 Hz)
- Measurement Range: ±50 in/sec (±1.27 m/sec) \*\*
- \* Electrical Connector: MIL-C-5015

### Vibration Sensor (SQI 640B00)

- O to 0.5 in/sec pk input velocity range
- 4 to 20 mA current output
- 0.005 in/sec pk resolution
- 180 to 60k cpm (3 to 1000 Hz) frequency range [±10%]
- 2-pin connector and two integral cable styles

### Tri-Axis Accelerometer (SQI604B31)

- \* Triaxial ring-style, industrial, ceramic shear ICP accel, 100 mV/g, 0.5 to 5k Hz, side exit, 4-pin conn.
- Sensitivity: (±20%) 100 mV/g (10.2 mV/(m/s<sup>2</sup>)) \*
- \*\* Frequency Range: (±3dB) 30 to 300000 cpm (0.5 to 5000 Hz)
- \* Measurement Range: ±50 g (±490 m/s<sup>2</sup>)
- \* Mounting: Through Hole

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Electrical Connector: 4-Pin MIL-C-26482 and 10' long cable to three \*\* **BNC** connectors

#### Accelerometer Mounting Kit (M-AMK)

- Attach your accelerometer (1/4 -28 thread) to your machinery \*\*
- \*\* The kit consists of 6 disks, 2 magnets and adhesives

### Triaxial accelerometer mounting block (M-TAMB)

- Convenient, inexpensive, triaxial measurements. It provides a means to \*\* secure three transducers (1/4 -28 thread) in an X-Y-Z configuration in a compact arrangement.
- \*\* The kit consists of one triaxial mounting block











# **Proximity Probes**

A proximity probe is a displacement transducer, providing an output voltage directly proportional to the distance between the probe tip and the observed conductive surface. It is capable of both static (position) and dynamic (vibration) measurements, and is primarily used for vibration and position measurement applications on fluid-film bearing machines, as well as in speed measurement applications

### Eddy Current Proximity Probe (SQPPC)

- Probe diameter: 6 mm
- Thread length 2-inch (with probe tip)
- Probe length: 0.5 m
- Extension cable length: 4.5 m
- Probe-extension connector: L6
- Each signal conditioner takes two (2) probes.
- Signal conditioner output: BNC (female)
- Power supply: 110 V 60 Hz/ 220 V-50 Hz
- Voltage output : 0 ~ -10 V
- ✤ Linear range: 0 ~ 2 mm
- ✤ Non-linearity error: <2%</p>
- Sensitivity: 4.5 mV/ µm (nominal)
- Resolution: 1 µm
- Frequency response: 0 ~ 5kHz, ± 3 dB
- Temperature range: -30 ~ 120 °C for probe, 0 ~ 65 °C for signal conditioner
- This kit consists of one 5mm proximity probe, one extension cable, one signal conditioner, and one power supply.
- Also comes in 2 pack and 4 pack

### 5 mm 1/4 28 Proximity Probe Mounting Kit (M-PPMK)

- Avoids the magnetic field interference commonly encountered in small diameter shafts.
- AIPE standard proximity probes, eddy current sensors, LVDT's, may be mounted both vertically and horizontally.
- Adjustable in the axial direction for measurements at various locations along the rotor shaft.
- This kit consists of one bracket assembly.







# Stroboscopes

A stroboscope is essential in vibration analysis to determine the speed of machinery, for visual examination of moving mechanisms, fault diagnosis, and balancing.

### Basic Digital Strobe (MO-620x-01x)

- Range Flashes/Minute: 30-10,000 FPM / RPM
- Accuracy/Resolution: 0.002% of setting or +/- 1 lsd /0.01 FPM
- Flash Energy/Duration: 230 mJoule up to 3450 FPM / 8-20 usec
- ✤ Average Power-Watts: >13W above 3450 FPM
- \* The kit consists of one stroboscope, one spare lamp and one carrying case
- Specify 115V, 230V, or battery power

### Digital Strobe with External Trigger (MO-6204-013)

- Range Flashes/Minute: 30-20,000 FPM / RPM
- Accuracy/Resolution: ±0.002% of setting or +/- 1 lsd / 0.01 FPM
- Flash Energy/Duration: 230 mJoule (20-50 µsec)
- Average Power-Watts: 10W
- External Trigger (1/8" Phone Jack): TTL (24V Max) Provides 5V out
- Tachometer Mode: 5-200,000 RPM
- Battery powered
- The kit consists of one stroboscope, one universal recharger, one spare lamp and one carrying case.

### Pocket Digital Strobe (MO-6205-052)

- Range Flashes/Minute: 100 12,500FPM / RPM
- Accuracy/Resolution: ± 0.5 FPM or ± 0.01% of reading.
- Flash Energy/Duration: 150 mJoules up to 3100 FPM
- Average Power-Watts: 7.9 watts @ 6000 FPM,
- External TriggerTTL (12V Max) Provides 5V out
- ✤ Tachometer Mode: 5-250,000 RPM
- Battery powered
- The kit consists of one stroboscope, two batteries, one universal recharger, one spare lamp, one holster and one carrying case.

### Remote Optical Sensor (MO-6180-057)

- Threaded stainless steel remote optical sensors with a visible red LED light source
- \* The kit consists of one remote optical sensor with 8 foot cable and mounting bracket.
- Requires MO-6204-013

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### Strobe Output to DAQ (MO-6280-037)

- Record strobe measurement with a data acquisition system
- \* The kit consists of one 6 foot input/output cable, 1/8" mono phone plug to BNC connector
- Requires MO-6204-013 or MO-6205-052











# **Tachometers**

A tachometer is indispensable in vibration analysis to compare actual shaft or rotor speed to vibration spectrum frequencies, locating resonance and sidebands of machinery.

### Pocket Laser Digital Tachometer (MO-PT99)

- Display: 5 Digits, 5 Alphanumeric LCD \*
- \* Range: 5 to 99,999 RPM
- Accuracy: ±0.01% or ±1 Digit
- Autoranging: 0.001 to 1.0 RPM
- Operating Range: 2 inches to 36 inches, ±45°
- Power: (2) "AA" 1.5 VDC batteries (60 hours)
- The kit consists of one PT-99 Pocket Tach 99 basic non-contact optical tachometer with 12 inches of T-5 Reflective Tape

### Pocket Laser Digital Tachometer kit (MO-6125-011)

- Display:: 5 Digits, 5 Alpha-numeric LCD
- Range(s): Optical: 5 to 200,000 RPM
- Accuracy: Optical:±0.01% of reading
- Totalizer: 1-999,990
- Resolution: 0.001 to 10 RPM (range dependent)
- Operating Range: 2 inches to 25 feet\*, ±70°
- Power:(2) "AA" 1.5 VDC batteries (30 hours)
- The kit consists of one tachometer, one remote contact assembly, 5 ft roll of T-5 reflective tape and carrying case

### Pistol Grip Tachometer (MO-6130-03x)

- Rang: 5-100,000 RPM \*
- Accuracy: ±1 RPM or 0.01% of reading
- Resolution: 1 RPM

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- Operating Range: 10 feet for Laser Model and 36" for LCD Model
- Display :6 digit, 0.5" high Liquid Crystal Display
- Power On Switch: Pistol grip trigger with latching push button
- Power: NiCad batteries and AC Recharger
- \*\* The kit consists of one tachometer, 12 inches of reflective tape, one recharger, and carrying case. Specify 115V or 230V

### Remote Optical Sensor (MO-6180-057)

- \*\* Threaded stainless steel remote optical sensors with a visible red LED light source
- ••• The kit consists of one remote optical sensor with 8 foot cable and mounting bracket.
- \* Requires MO-6125-011 or MO-6130-03x

### Strobe Output to DAQ (MO-6280-037)

- \*\* Record strobe measurement with a data acquisition system
- \* The kit consists of one 6 foot input/output cable, 1/8" mono phone plug to BNC connector
- \* Requires MO-6125-011 or MO-6130-03x











# **Motor Current Probe**

A motor current probe enables Motor Current Signature Analysis (MCSA), which is a useful analysis and condition monitoring technique for the health of induction motors. Through signal analysis, you can perform fault frequency calculation for diagnose problems, such as broken rotor bars, turn-to-turn shorts due to insulation breakdown, single phasing or loss of one phase, phase imbalance, both the static and dynamic eccentricity, and bearing defects.

### AC Motor Current Probe (SQICP1)

 Clamp On Probe, AC Current 0.1-24, 0.5-240 Amps, AC Frequency Response 40Hz to 40 kHz, Connector Type BNC, Meter Type Oscilloscope, Output 10 Millivolts/Amp, Jaw Capacity 21 Inches, Features Dual Range



\* The kit consists of AC current probe

### **Shaft Alignment**

Misalignment is probably the most common cause of machinery malfunction. A poorly aligned machine can cost a factory 20% to 30% in machine down time, replacement parts, inventory, and energy consumption. SpectraQuest offers two alignment kits to put your machinery back into alignment.

### Shaft Alignment Kit (M-ATK)

- Align shafts precisely with convenient and simple Windows alignment software.
- ✤ Accommodates ½" to 1 ¼" diameter shafts.
- The kit consists of two precision dial indicators, two mounting brackets/bars, one mirror, one set of feeler gauges, and instructions packaged in a rugged plastic case.



### AlignmentQuest Bracketry with Built-in Inclinometer (SAT-BKT)

- Align shafts precisely with convenient and simple Windows alignment software.
- Accommodates 1" to 8" diameter shafts.

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The kit consists of two precision dial indicators, two mounting brackets with one inclinometer, two 12" bars, two 6" bars, one mirror, and one set of feeler gauges packaged in a rugged plastic case.



# *SpectraQuest Offers a Complete Line of Simulators for Learning Machinery Diagnosis*