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Specialty Sensors

The specialty sensors are modifications of Wilcoxon accelerometer and hydrophone designs to meet specific application requirements. The Zerkometer™ and leak detection sensors are specialty sensors that have found wide use and acceptance in industry.

Zerkometer™

The Zerkometer accelerometers are designed to be mounted where zerk fittings exist to grease bearings. Since the grease fittings are usually located very close to the bearing they provide an ideal location for accelerometers to acquire dynamic vibration data. The Zerkometer has a tapered pipe thread base, a grease channel through the base and a zerk fitting on the side to allow users continued access to grease the bearing using existing zerk greasing equipment. The Zerkometer has excellent frequency response using the pipe thread mounting base and can be used for most high frequency analysis techniques.

Leak Detection Sensors

Wilcoxon manufactures two types of leak detection sensors, accelerometers and hydrophones. The accelerometers are used like microphones to “listen” to the vibration of the ground while the hydrophones are used to “listen” to the sounds of leaks in the piping. The accelerometers are very high sensitivity to provide the highest levels of signals to facilitate hearing the leaks through vibration in the earth caused by the noise of the leak.

The leak detection hydrophone is a pressure sensor that is directly coupled to the fluid system to allow listening to the acoustic signal produced by a leak. The sensor has a pipe thread base for mounting directly to the piping. There is an air release valve built in to permit easy purging of the air after the sensor is installed. These hydrophones have been well accepted for detecting and locating leaks.

Wilcoxon Specialty Sensors:

Model	Style	Sensitivity	Low Freq	High Freq	Accel Range
221A	shear	100 mV/g	0.5 Hz	7,000 Hz	80 g peak
221B	shear	100 mV/g	0.5 Hz	10,000 Hz	80 g peak
222A	shear	100 mV/g	0.5 Hz	8,500 Hz	80 g peak
996LD	compression	12 V/g	10 Hz	4,000 Hz	0.10 g peak
H571LD-1A	compression	-187 dB re 1 V/ μ Pa	5.0 Hz	20,000 Hz	-
H571LD-2	compression	-175 dB re 1 V/ μ Pa	5.0 Hz	20,000 Hz	-

Note: Frequency @ $\pm 3dB$.

Model 221A Accelerometer with Grease Fitting Mount



FEATURES:

- Rugged design
- Corrosion resistant
- Hermetic seal
- ESD protection
- Reverse wiring protection
- Grease channel through sensor body

DYNAMIC

Sensitivity, ±20%, 25°C	100 mV/g
Acceleration Range	80 g peak
Amplitude Nonlinearity	1%
Frequency Response, nominal ¹ : ± 3 dB	0.5 - 7,000 Hz
Resonance Frequency, nominal	13 kHz
Transverse Sensitivity, max	5% of axial
Temperature Response	-50°C -7% +80°C +5%

ELECTRICAL

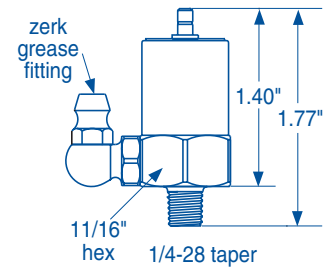
Power Requirement:	voltage source	18 - 30 VDC
	current regulating diode	2 - 10 mA
Electrical Noise, equiv. g:		
Broadband	2.5 Hz to 25 kHz	700 µg
Spectral	10 Hz	10 µg/√Hz
	100 Hz	5 µg/√Hz
	1000 Hz	5 µg/√Hz
Output Impedance, max.		100 Ω
Bias Output Voltage		12 VDC
Grounding		case isolated

ENVIRONMENTAL

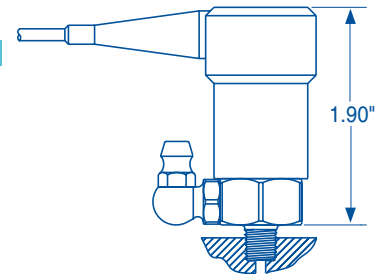
Temperature Range	-50 to 80°C
Vibration Limit	500 g peak
Shock Limit	5,000 g peak
Sealing	Hermetic
Base Strain Sensitivity, max.	0.00002 g/µstrain

PHYSICAL

Sensing Element Design	PZT ceramic / shear
Weight	53 grams
Case Material	316L stainless steel
Mounting	1/4 - 28 taper stud
Zerk Grease Fitting	Steel, 90° angle 1/4-28 taper



Model 221A



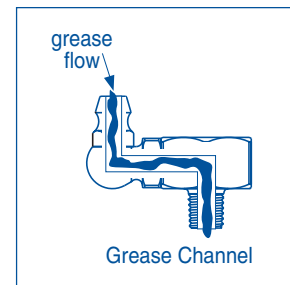
Model 221A with
mating connector
and cable

CONNECTOR PIN	FUNCTION	CABLE CONDUCTOR COLOR
SHELL	common	Shield
PIN	power/ signal	Center
HOUSING	isolated	N/C

NOTES: ¹ At 50 lbs. inch torque.

ACCESSORIES SUPPLIED: Model GF90: 90° steel 1/4-28 Zerk grease fitting;
Calibration data (level 2).

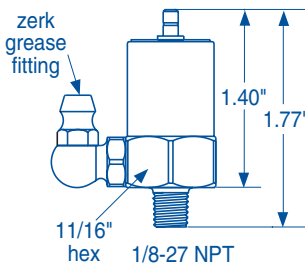
AVAILABLE ACCESSORIES: GFA18 – Grease fitting adapter, 1/4-28 taper - 1/8 female; Hex thread mounting adapters;
(Call factory Customer Service).



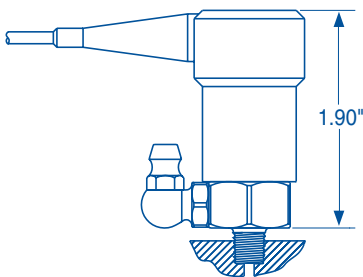


FEATURES:

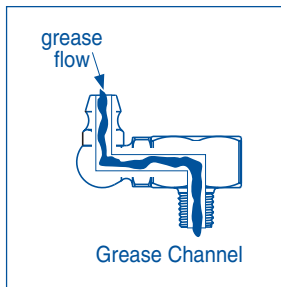
- Rugged design
- Corrosion resistant
- Hermetic seal
- ESD protection
- Reverse wiring protection
- Grease channel through sensor body



Model 221B



Model 221B with mating connector and cable



Model 221B

Accelerometer with Grease Fitting Mount

DYNAMIC

Sensitivity, $\pm 20\%$, 25°C	100 mV/g
Acceleration Range	80 g peak
Amplitude Nonlinearity	1%
Frequency Response, nominal ¹ : ± 3 dB	0.5 - 10,000 Hz
Resonance Frequency, nominal	18 kHz
Transverse Sensitivity, max	5% of axial
Temperature Response	-50°C -7% +80°C +5%

ELECTRICAL

Power Requirement:	voltage source	18 - 30 VDC
	current regulating diode	2 - 10 mA
Electrical Noise, equiv. g:		
Broadband	2.5 Hz to 25 kHz	700 μ g
Spectral	10 Hz	10 μ g/ \sqrt Hz
	100 Hz	5 μ g/ \sqrt Hz
	1000 Hz	5 μ g/ \sqrt Hz
Output Impedance, max.		100 Ω
Bias Output Voltage		12 VDC
Grounding		case isolated

ENVIRONMENTAL

Temperature Range	-50 to 80°C
Vibration Limit	500 g peak
Shock Limit	5,000 g peak
Sealing	Hermetic
Base Strain Sensitivity, max.	0.00002 g/ μ strain

PHYSICAL

Sensing Element Design	PZT ceramic / shear
Weight	57 grams
Case Material	316L stainless steel
Mounting	1/8 - 27 NPTstud
Zerk Grease Fitting	Steel, 90° angle 1/4-28 taper
Mating Connector	R35
Recommended Cabling	J96

CONNECTOR PIN	FUNCTION	CABLE CONDUCTOR COLOR
SHELL	common	Shield
Pin	power/ signal	Center
Housing	isolated	N/C

NOTES: ¹ At 200 inch lbs. torque and 0.225 inch thread engagement.

ACCESSORIES SUPPLIED: Model GF90: 90° steel 1/4-28 Zerk grease fitting;
Calibration data (level 2).

AVAILABLE ACCESSORIES: GFA18 – Grease fitting adapter, 1/4-28 taper - 1/8 female; Hex thread mounting adapters; (Call factory Customer Service).



Model 222A Accelerometer with Grease Fitting Mount



FEATURES:

- Rugged design
- Corrosion resistant
- Hermetic seal
- Case isolated
- ESD protection
- Reverse wiring protection
- Grease channel through sensor body

DYNAMIC

Sensitivity, ±10%, 25°C	100 mV/g
Acceleration Range	80 g peak
Amplitude Nonlinearity	1%
Frequency Response ¹ , nominal:	
± 5%	3 - 5,000 Hz
±10%	1 - 6,000 Hz
± 3 dB	0.5 - 8,500 Hz
Resonance Frequency	23 kHz
Transverse Sensitivity, max	5% of axial
Temperature Response	-50°C -5%
	+120°C +5%

ELECTRICAL

Power Requirement:	voltage source	18 - 30 VDC
	current regulating diode	2 - 10 mA
Electrical Noise, equiv. g:		
Broadband	2.5 Hz to 25 kHz	700 µg
Spectral	10 Hz	10 µg/√Hz
	100 Hz	5 µg/√Hz
	1000 Hz	5 µg/√Hz
Output Impedance, max.		100 Ω
Bias Output Voltage		12 VDC
Grounding		case isolated, internally shielded

ENVIRONMENTAL

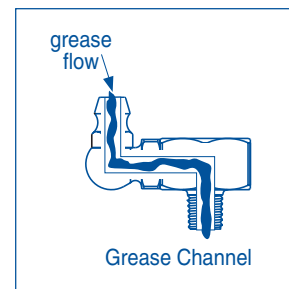
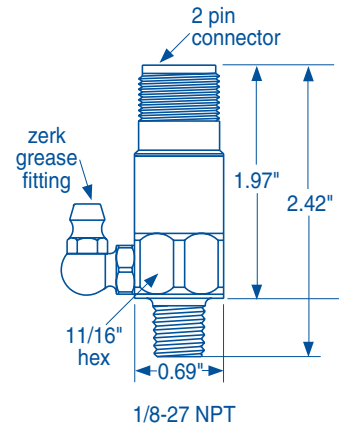
Temperature Range	-50 to 120°C
Vibration Limit	500 g peak
Shock Limit	5,000 g peak
Electromagnetic Sensitivity, equiv. g, max	70 µg/gauss
Sealing	Hermetic
Base Strain Sensitivity, max.	0.00002 g/µstrain

PHYSICAL

Sensing Element Design	PZT ceramic / shear
Weight	76 grams
Case Material	316L stainless steel
Mounting	1/8 - 27 NPT stud
Zerk Grease Fitting	Steel, 90° angle
	1/4-27 taper
Output Connector	2 pin, MIL-C-5015 style
Mating Connector	R6 type, but not R6SL
Recommended Cabling	J10 / J9T2A

CONNECTOR PIN

SHELL	FUNCTION
A	ground
B	power/ signal common



NOTES: ¹ At 200 inch/ lb. torque and 0.225 inch thread engagement.

ACCESSORIES SUPPLIED: Model GF90: 90° steel 1/4-28 Zerk grease fitting; Calibration data (level 2).

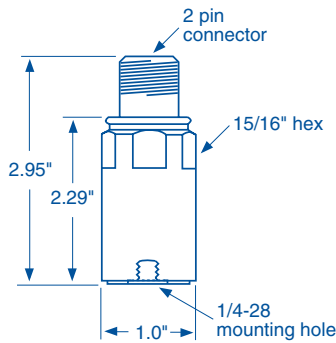
AVAILABLE ACCESSORIES: GFA18 – Grease fitting adapter, 1/4-28 taper - 1/8 female; Hex thread mounting adapters; (Call factory Customer Service).





FEATURES:

- Low noise floor
- High sensitivity
- Compatible with many commercially available leak detection systems



Model 996LD

High Sensitivity Accelerometer

DYNAMIC

Sensitivity	12 V/g, ±3 dB
Frequency Response, ±3 dB	10 - 4,000 Hz
Resonance Frequency, nominal	14 kHz
Acceleration Range, nominal	0.10 g peak
Shock Limit	10,000 g

ELECTRICAL

Supply Voltage	12 - 24 VDC
Supply Current	2 mA
Bias Output Voltage	4.8 - 7.5 VDC
Grounding	case grounded
Electrical Noise, nominal	
100 Hz	0.08 µg/√Hz
1000 Hz	0.016 µg/√Hz

ENVIRONMENTAL

Temperature Range	-10°C to 80°C
Sealing	hermetic design

PHYSICAL

Case Material	316 stainless steel
Mounting	1/4 - 28 tapped hole
Connector	2 pin, MIL-C-5015 style

Pin-out: Pin A	power, signal
Pin B	common, case

Mating Connector	Wilcoxon R6 (Amphenol 97-106A-10SL-4S or MS-3106A-10SL-4S)
------------------------	--

- ACCESSORIES SUPPLIED:** Foam sleeve shock protector; SF6 mounting stud
ACCESSORIES AVAILABLE: Cable to interface with leak detector systems; magnetic base

Model H571LD-1A Leak Detection Hydrophone



FEATURES:

- Low noise floor
- High sensitivity
- Compatible with many commercially available leak detection systems

DYNAMIC

Sensitivity, ± 3 dB	-187 dB re 1V/ μ Pa
Amplifier Frequency Response, ± 3 dB	5 Hz to 20 kHz

ELECTRICAL

Powering:	
voltage source	9 - 15 VDC
current regulating diode	1.5 - 4 mA
Bias Voltage	6 VDC

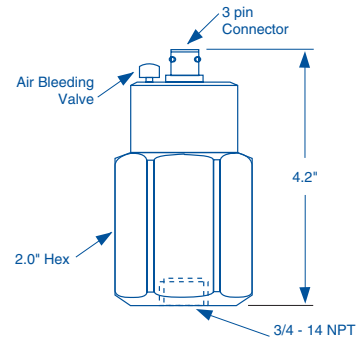
ENVIRONMENTAL

Maximum Temperature	60°C
Maximum Pressure	150 psi

PHYSICAL

Mounting	3/4 - 14 NPT
Case Material	316 stainless steel housing
Output Connector	3 pin, MIL-C-26482
Mating Connector	Wilcoxon Research R4 (Amphenol PTO6A-8-3S(SR))

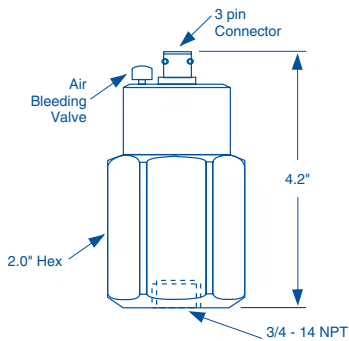
Pin Out:	PIN A	Case
	PIN B	Common
	PIN C	Power, Signal





FEATURES:

- Low noise floor
- High sensitivity
- Compatible with many commercially available leak detection systems



Model H571LD-2

Leak Detection Hydrophone

DYNAMIC

Sensitivity, ± 3 dB	-175 dB re 1V/ μ Pa
Amplifier Frequency Response, ± 3 dB	5 Hz to 20 kHz

ELECTRICAL

Powering:	
voltage source	9 - 15 VDC
current regulating diode	1.5 - 4 mA
Bias Voltage	6 VDC

ENVIRONMENTAL

Maximum Input Pressure	150 PSI
Maximum Temp	60°C

PHYSICAL

Mounting	3/4 - 14 NPT
Case Material	316 stainless steel housing
Output Connector	3 pin, MIL-C-26482
Mating Connector	Wilcoxon Research R4 Amphenol PTO6A-8-3S (SR)

Pin Out:	Pin A	Case
	Pin B	Common
	Pin C	Power, Signal



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